BC57Q

Intel® Socket LGA1156
Core i7/i5/i3 32nm/45nm CPU

ATX Motherboard

User's Manual

Edition 1.00 – Apr, 2011

FCC Statement

THIS DEVICE SUPPORTS PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.

(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS "A" DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES.

THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTATLLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS.

OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

Notice

This guide is designed for experienced users to setup the system within the shortest time. For detailed information, please always refer to the electronic user's manual.

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A Message to the Customer

BCM Customer Services

Each and every BCM product is built to the most exacting specifications to ensure reliable performance in the harsh and demanding conditions typical of industrial environments. Whether your new BCM device is destined for the laboratory or the factory floor, you can be assured that your product will provide the reliability and ease of operation for which the name BCM has come to be known.

Your satisfaction is our primary concern. Here is a guide to BCM customer services. To ensure you get the full benefit of our services, please follow the instructions below carefully.

Technical Support

We want you to get the maximum performance from your products. So if you run into technical difficulties, we are here to help. For the most frequently asked questions, you can easily find answers in your product documentation. These answers are normally a lot more detailed than the ones we can give over the phone. So please consult the user's manual first.

To receive the latest version of the user's manual; please visit our Web site at:
http://www.bcmcom.com.

If you still cannot find the answer, gather all the information or questions that apply to your problem, and with the product close at hand, call your dealer. Our dealers are well trained and ready to give you the support you need to get the most from your BCM products. In fact, most problems reported are minor and are able to be easily solved over the phone.
In addition, free technical support is available from BCM engineers every business day. We are always ready to give advice on application requirements or specific information on the installation and operation of any of our products. Please do not hesitate to call or e-mail us.

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Product Warranty

BCM warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by BCM, or which have been subject to misuse, abuse, accident or improper installation. BCM assumes no liability under the terms of this warranty as a consequence of such events. Because of BCM high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If any of BCM products is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details. If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU type and speed, BCM products model name, hardware & BIOS revision number, other hardware and software used, etc.) Note anything abnormal and list any on-screen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information available.
3. If your product is diagnosed as defective, obtain an RMA (return material authorization) number from your dealer. This allows us to process your good return more quickly.
4. Carefully pack the defective product, a complete Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.

Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Manual Objectives

This manual describes in detail the BCM BC57Q Main board.

We strongly recommend that you study this manual carefully before attempting to interface with BC57Q or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance.

Please be aware that it is possible to create configurations within the CMOS RAM that make booting impossible. If this should happen, clear the CMOS settings, (see the description of the Jumper Settings for details).

If you have any suggestions or find any errors concerning this manual and want to inform us of these, please contact our Customer Service department with the relevant details.

Safety Precautions

Warning!

Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

Caution!

Always ground yourself to remove any static charge before touching the mainboard. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

Document Amendment History

Revision	Date	Comment
1st (1.00)	Apr, 2011	Initial Release

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Mainboard Specifications

Model	BC57Q
Processor	Socket LGA1156 supports Core i7/i5/i3 32nm/45nm CPU
Chipset	Intel® Q57
Memory	4 x 240 Pin DIMM sockets supports DDR3 memory module (1.5V) 1066/1333 MHz up to 16GB (4GB maximum/slot)
Display	Intel® GMA HD (Needs to use Intel Processor that provides “Intel HD Graphics” feature)
SATA	5 x SATA II connectors supports 3.0 Gbs transfer speed
PCI-E	1x PCI-E x 16 slots (Slot “PCIEX16_1”)
	1 x PCI-E x4 slot (Slot “PCIEX4_1”)
	1 x PCI-E x 1 slot
PCI	4 x PCI Slots (PCI 2.3 compliant)
USB	12 x USB 2.0 ports (6 x Rear I/O, 6 x header)
TPM	Infineon® TPM Chip 9635
	1 x TPM 1.2 Security Device
Super I/O Controller	Winbond® W83627DHG-A
Serial Ports	4 x RS232 ports (4 x header)
LPT	1 x LPT header
Watch Dog Timer	1 ~ 255 sec timer
HW Monitor	Yes
Audio	Realtek® ALC892
	HD Audio Codec with auto jack sensing
LAN	Intel® 82578DM Gigabit PHY
	1 x 10/100/1000 LAN
	Intel® 82583V PCI-E Gigabit LAN
	1 x 10/100/1000 LAN
BIOS	AMI® BIOS
	AMI BIOS with 32Mb SPI ROM
Expansion Slots	
PCI-E	1 x PCI-E x 16 slot 1 x PCI-E x 4 slot

	1 x PCI-E x 1 slot
PCI	4 x PCI slots
Onboard I/O Headers	
SATA	5 x Std. SATA Connectors
USB	4 x USB Headers (8 ports on headers)
RS232	4 x Headers
LPT	1 x Header
SPDIF	1 x Header
CD-IN	1 x Header
Front Audio	1 x Header
Amplifier	1 x Header
Front Panel	1 x Header
Fan Header	3 x Headers (4-pins)
Chassis Intrusion Header	1 x Header
LANLED	1 x Header
DIO	20Bit (10 In, 10 Out)
Onboard Jumpers	
COM Port Ring-In/ Power Select	4 x Headers provides Selection of “Ring-In”, or “12V” or “5V” on COM port
AT/ATX Select	1 x Header
Clear CMOS	1 x Header
Back I/O Panel	
PS/2 Keyboard /Mouse	1 x DIN 6 Stack up Connector
VGA	1 x DB 15 Connector
DVI	1 x DVI Connector
USB2.0	6x Stack up USB Connector
LAN and USB	2 x Stack up RJ45 and USB Connectors
ESATA	1 x Stack up ESATA Connector
Audio	1 x 3 Jacks Audio Connector (Line-in, Line-Out, Mic)
Power & Connector	
	1 x Std. 24 pin ATX Connector
	1 x 4 pin ATX 12 Connector
Form Factor	
	ATX 12.0” x 9.6”

Chapter 1: System Setup

This chapter describes the mainboard features and the new technologies it supports

1.1 Welcome!

The mainboard delivers a host of new features and latest technologies, making it another line of BCM long life mainboards! Before you start installing the mainboard, and hardware devices on it, check the items in your package with the list below.

If any of the items listed below is damaged of missing, please contact with your vendor.

1.2 Packing Contents

- **Mainboard**
  - **1 x BC57Q**
- **Cable**
  - **2 x Serial ATA Cable**
- **Accessories**
  - **1 x BC57Q I/O Shield**
- **Software CD**
  - **1 x CD contains drivers, user's manual, and QIG (Quick Installation Guide)**
- **Documentation**
  - **1 x QIG (Quick Installation Guide)**

1.3 Special Features

1.3.1 Product Highlights

• Intel® i7/i5/i3 LGA1156 32nm/45nm Processor Support

This mainboard supports the Intel® Intel® i7/i5/i3 32nm/45nm processors in the LGA1156 package.

• Intel® Q57 Express Chipset

The Intel® Q57 PCH provides all business with more effective costs management, safer computing environment, and deploys more responsive PCs.

• DDR3 Memory Support

The mainboard supports DDR3 memory that features data transfer rates of 1066/ 1333MHz to meet the higher bandwidth requirements of the latest 3D graphics, multimedia, and Internet applications.

• Serial ATA 3.0Gb/s Technology

The mainboard supports the Serial ATA (SATA) technology through 6 Serial ATA II interface from Intel® Q57 PCH.

• High Definition Audio

The mainboard came with the Realtek ALC892 high-definition audio CODEC that lets you enjoy high quality 7.1+2 channel audio without having to buy advanced sound cards.

• PCI-E x16 support

The PCI-E x16 VGA interface specification enhances graphics performance with high bandwidth (PCIEX16_1 slot only).

• USB 2.0 Technology

The mainboard implements the Universal Serial Bus (USB) 2.0 specification, dramatically increasing the connection speed from the 12Mbps bandwidth on USB1.1 to a fast 480Mbps on USB2.0. USB2.0 is backward compatible with USB1.1.

• Trusted Platform Module (TPM) Support

By combining the onboard TPM 1.2 with TPM security software (provided by the third party), it will enhance the security level of the system.

• PRECAUTION: When TPM is enabled and utilized through TPM software, there is possibility that the encrypted data will not be accessible, or recoverable if one of the following situations occurred:

1. Lost of TPM password.

2. System or board failure, or being replaced.

3. Hard Drive failure.

1.4 Before you proceed

Take note of the following precautions before you install mainboard components or change any mainboard settings.

- **Unplug the power cord from the wall socket before touching any component inside the system.**
- **Use a grounded wrist strap or touch a safely grounded object or to a metal object, such as the power supply case, before handling components to avoid damaging them due to static electricity.**
- **Hold components by the edges to avoid touching the ICs on them.**
- **Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that came with the component.**
- **Before you install or remove any component, ensure that the ATX power supply is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the mainboard, peripherals, and/or components.**

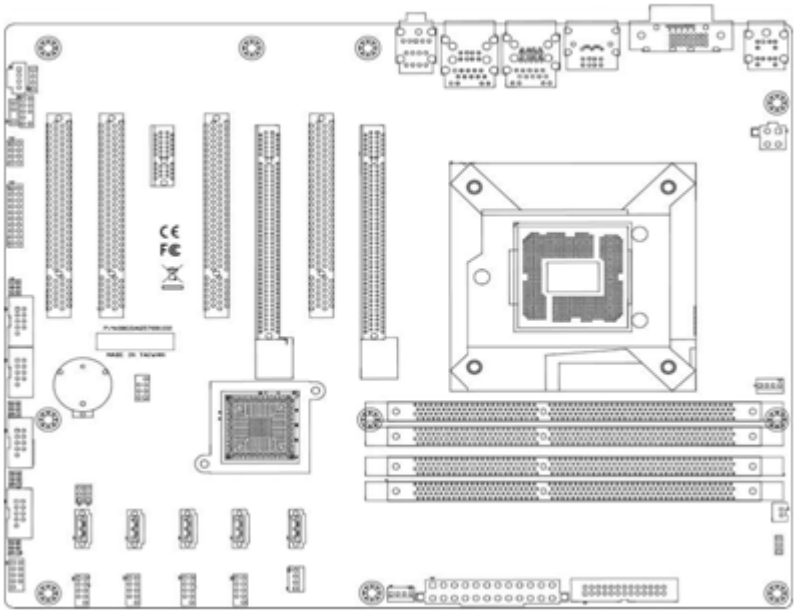
1.5 Mainboard Overview

Before you install the mainboard, study the configuration of your chassis to ensure that the mainboard fits into it.

Make sure to unplug the power cord before installing or removing the mainboard. Failure to do so can cause you physical injury and damage mainboard components.

1.5.1 Placement Direction

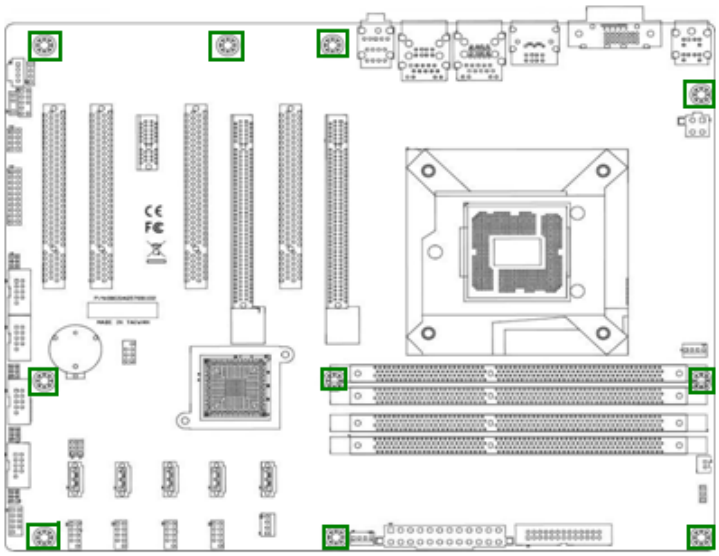
When installing the mainboard, make sure that you place it into the chassis in the correct orientation. The edge with external port goes to the rear part of the chassis as indicated in the image below.



1.5.2 Mounting Holes

Place the screws into the mounting holes indicated by green squares to secure the mainboard to the chassis.

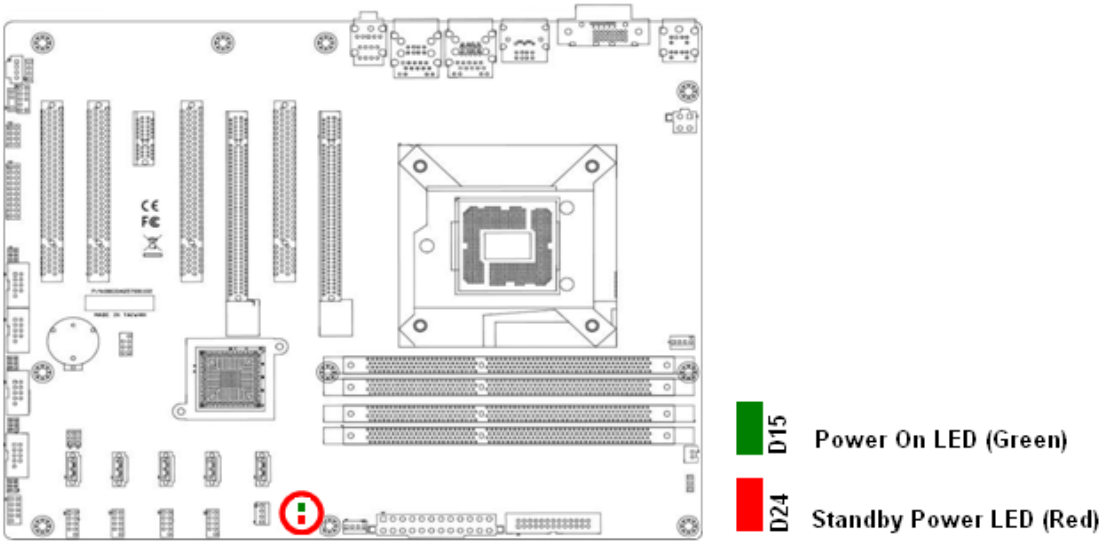
Do not over-tighten the screws! Doing so may damage the mainboard.



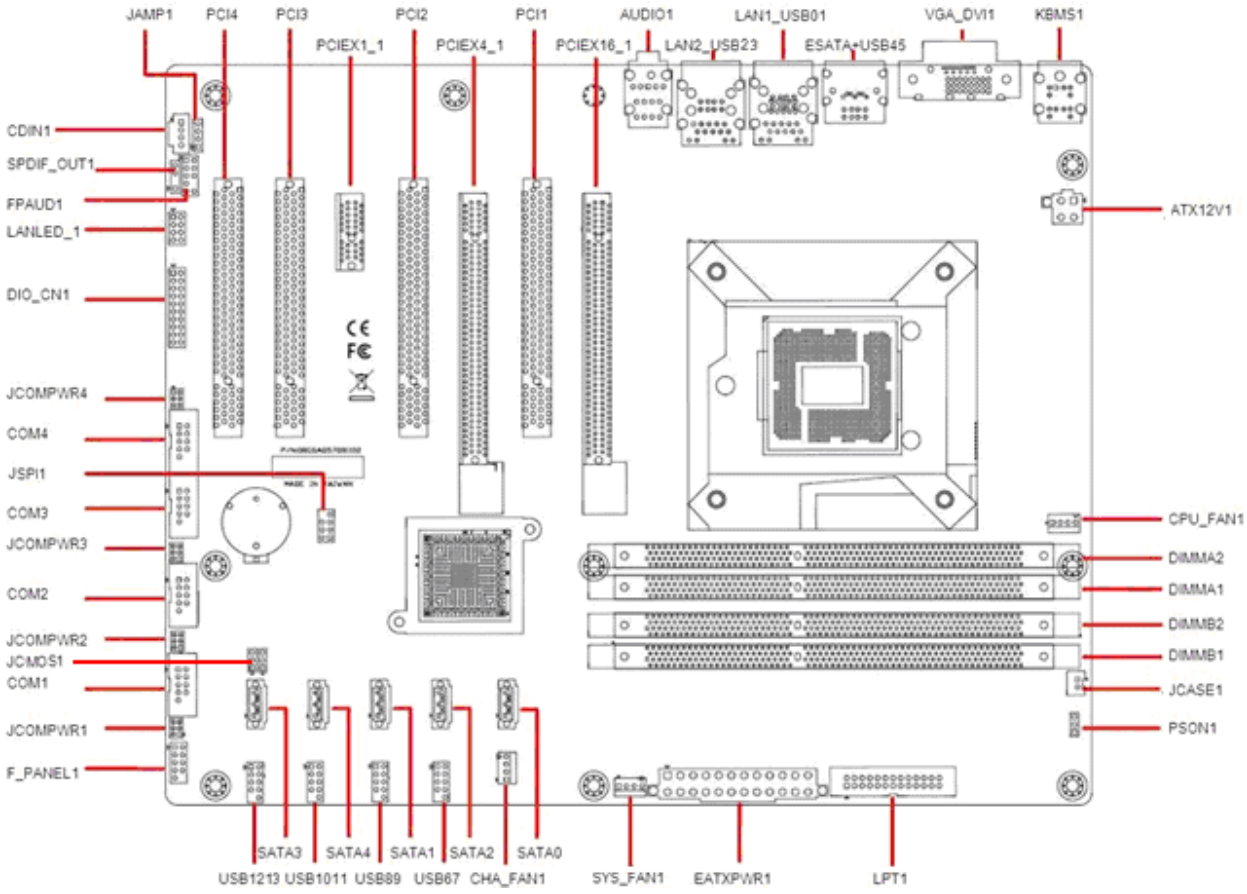
1.5.3 Onboard LEDs

The mainboard comes with a “Power On LED” (green) and one “Standby Power LED” (red) to indicate the system status. When the “Standby Power LED” lights on: It means the system is either in the standby state, or the power cable is still connected to the power source. The “Power On LED” lights on/off to indicate that the system status, in sleep mode, or in soft-off mode. This is a reminder that you should shut down the system and unplug the power cable before removing or plugging in any mainboard component. The illustration below shows the locations of onboard LEDs.

Place the screws



1.5.4 Mainboard Layout



1.5.5 Layout Content List

• 1.5.5.1 Slots

Label	Function	Note	Page
DIMMA1	240-pin DIMM slot 1	1. If there is only one memory module being installed in the system, install it on this slot first. 2. If there are only two memory modules being installed in the system, install these 2 modules on “DIMMA1” and “DIMMB1” first.	31
DIMMA2	240-pin DIMM slot 2		31
DIMMB1	240-pin DIMM slot 3	If there are only two memory modules being installed in the system, install these 2 modules on “DIMMA1” and “DIMMB1” first.	31
DIMMB2	240-pin DIMM slot 4		31
PCIEX16_1	PCI express x16 slot		49
PCIEX4_1	PCI express x4 slot		49
PCIEX1_1	PCI express x1 slot		49
PCI1, PCI2, PCI3, PCI4	PCI slot		49

• 1.5.5.2 Internal Jumpers

Label	Function	Note	Page
JCMOS1	Clear CMOS	3 x 1 header, pitch 2.54mm	32
JCOMPWR1, JCOMPWR2, JCOMPWR3, JCOMPWR4	COM1, COM2, COM3, COM4 RI/+5V/+12V Select	3 x 2 header, pitch 2.00mm	34
PSON1	AT/ATX Power Select	3 x 1 header, pitch 2.54mm	33
JSPI1	SPI pin header (Factory use only)	4 x 2 header, pitch 2.54mm	47

• 1.5.5.3 Internal Headers			
Label	**Function**	**Note**	**Page**
ATX12V1	ATX Power Connector	2 x 2 header	35
EATXPWR1	ATX Power Connector	12 x 2 header	35
SATA1, SATA2, SATA3, SATA4, SATA5	Serial ATA Connectors 1~5	7-pin header	38
CPU_FAN1	CPU Fan Connector	4 x 1 wafer, pitch 2.54mm	39
CHA_FAN1	Chassis Fan Connector	4 x 1 wafer, pitch 2.54mm	39
SYS_FAN1	System Fan Connector	4 x 1 wafer, pitch 2.54mm	39
JCASE1	Chassis Intrusion Connector	2 x 1 header, pitch 2.54mm	39
CDIN1	Optical Drive Audio Connector	4 x 1 header, pitch 2.54mm	40
SPDIF_OUT1	Digital Audio Connector	4 x 1 header, pitch 2.54mm	40
FPAUD1	Front Panel Audio Connector	5 x 2 header, pitch 2.54mm	41
JAMP1	Amplifier Connector	4 x 1 header, pitch 2.54mm	42
USB67 USB89 USB1011 USB1213	USB 2.0 Connector	5 x 2 header, pitch 2.54mm	42
COM1, COM2, COM3, COM4	Serial Port Connector 1,2,3,4	5 x 2 header, pitch 2.54mm	43
LPT1	Parallel Port Connector	13 x 2 header, pitch 2.54mm	43
F_PANEL1	System Panel Connector	5 x 2 header, pitch 2.54mm	44
DIO_CN1	Digital I/O Connector	10 x 2 header, pitch 2.54mm	44
LANLED_1	LAN LED header	5 x 2 header, pitch 2.54mm	45

• 1.5.5.4 Back Panel Connectors

Label	Function	Note	Page
KBMS1	PS/2 keyboard and mouse	6-pin Mini-Din	36, 37
VGA_DVI1	VGA Connector DVI Connector	D-sub 15-pins, female Dual Link DVI-D; 24-pins	36, 37
ESATA+USB45	ESATA Connector USB Connector x 2		36, 37
LAN1_USB01	RJ-45 Ethernet Connector x 1 USB 3.0 Connector x 2		36, 37
LAN2_USB23	RJ-45 Ethernet Connector x 1 USB Connector x 2		36, 37
AUDIO1	Line-in Port, Line-out Port, Microphone Port,	5.1 Channel Audio I/O (3 jacks)	36, 37

1.6 Central Processing Unit (CPU)

This mainboard supports the Intel® LGA1156 socket for Intel® Core™ i7/i5/i3 desktop processors. If you do not have the CPU cooler, consult with your dealer before turning on the system.

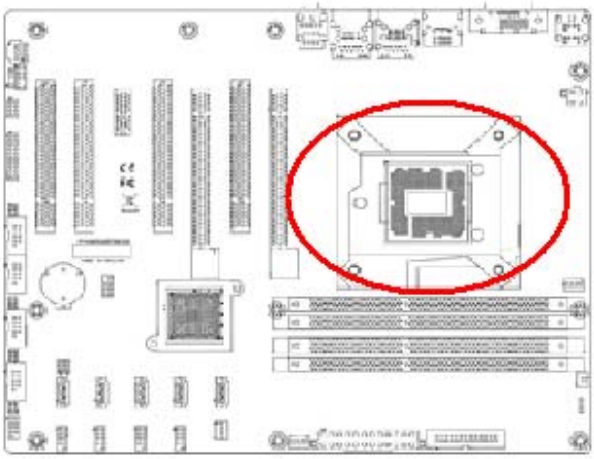
- Your boxed Intel® LGA1156 processor package should come with installation instructions for the CPU, fan, heatsink, and the retention assembly.
- Upon purchase of the mainboard, make sure that the PnP cap is on the socket and the socket pins are not bent. Contact your retailer immediately if the PnP cap is missing, or if you see any damage to the PnP cap/socket pins/mainboard components. BCM will shoulder the cost of repair only, if the damage is shipment/ transit-related.
- Keep the PnP cap after installing the mainboard. BCM will process Return Merchandise Authorization (RMA) requests only if the mainboard comes with the cap installed on the LGA1156 socket.
- The product warranty does not cover damage to the socket pins resulting from incorrect CPU installation/ removal, or misplacement/ loss/ incorrect removal of the PnP cap.

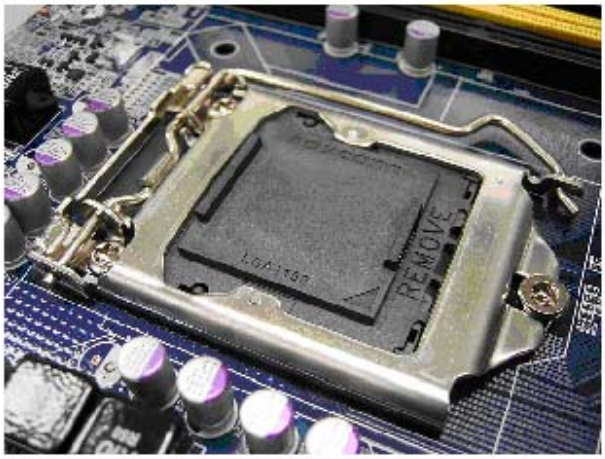
1. **Overheating: Overheating will seriously damage the CPU and mainboard. Always make sure the cooling fan can work properly to protect the CPU from overheating.**
2. **Make sure that you apply an even layer of thermal paste between the CPU and the heatsink to enhance heat dissipation.**
3. **Replacing the CPU: While replacing the CPU, always turn off the ATX power suppply or unplug the power supply's powr cord from the grounded outlet first in order to prevent damage to the system.**

1.6.1 Installing the CPU

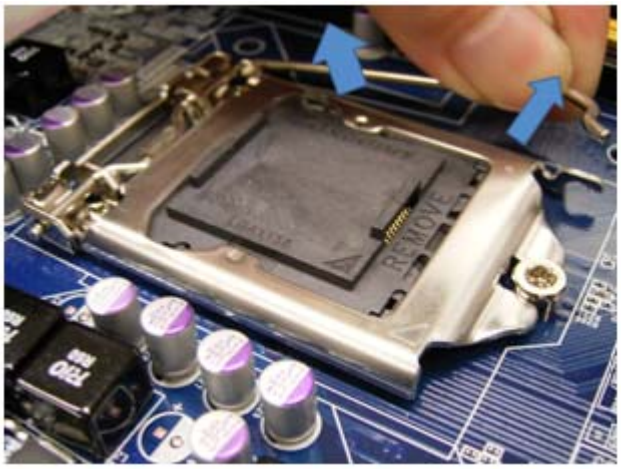
To install a CPU

1. Locate the CPU socket (LGA1156 Socket) on the mainboard.



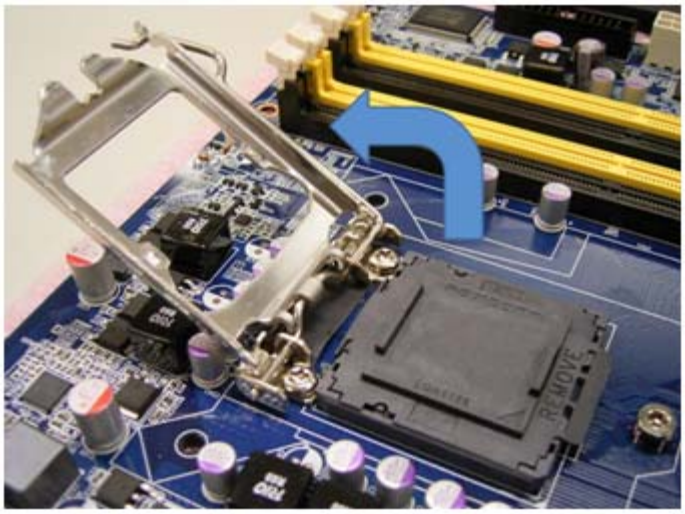


2. Unlatch the “CPU Socket Lever” by pressing the lever down and move it away from the main structure of the socket.



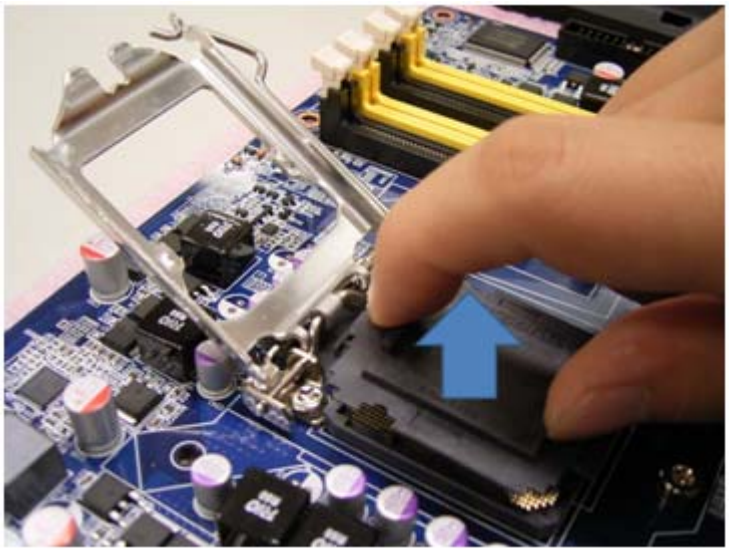
To prevent damage to the socket pins, do not remove the “CPU Socket Cover” (PnP cap) unless you are installing a CPU.

3. Lift the load lever up in the direction of the arrow to a 135° angle, so the metal “CPU Socket Cover” can also be lifted.

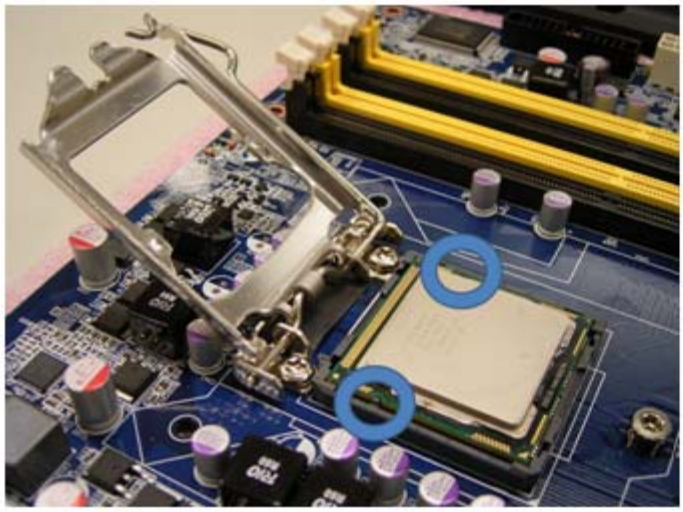


4. The CPU socket has a plastic protection cap installed on it (black color, a.k.a. “CPU Socket Cover”, or “PnP cap”) in order to protect the socket pins from damage. If you are going to install a CPU, remove the plastic protection cap away from the CPU socket by lifting it up

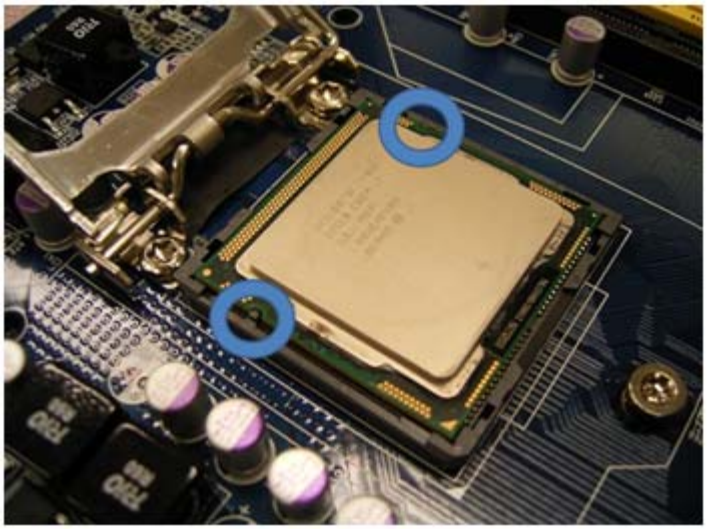
   (NOTE: Please do not discard this plastic protection cap. Just in case if you need to RMA this board in the future, you need to install this plastic protection cap in order to protect the CPU socket)



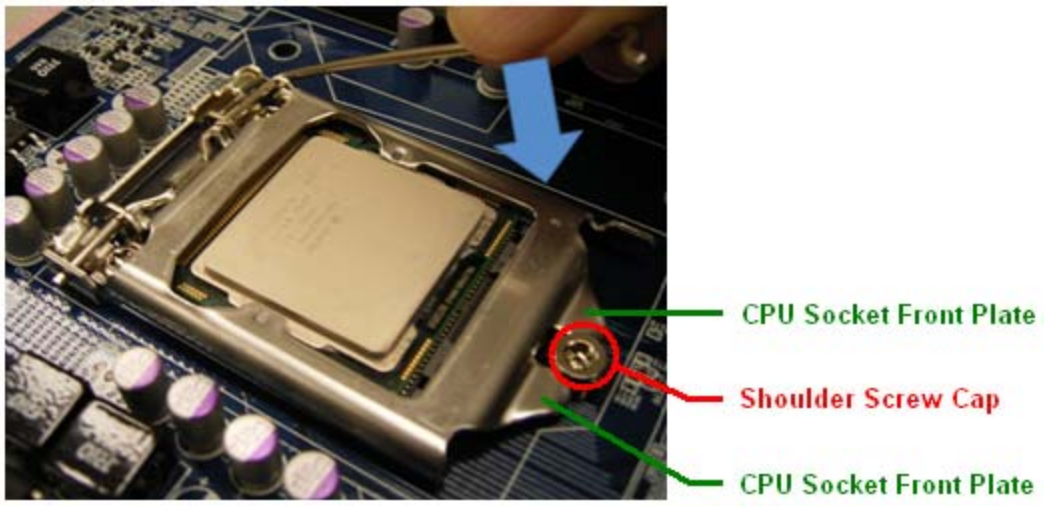
5. There are two notches on the CPU itself (one on each side), and there are two “Socket Alignment keys” on the CPU socket as well. Line up the two CPU notches with the “Socket Alignment Keys” on the socket, and insert the CPU into the CPU socket slowly.



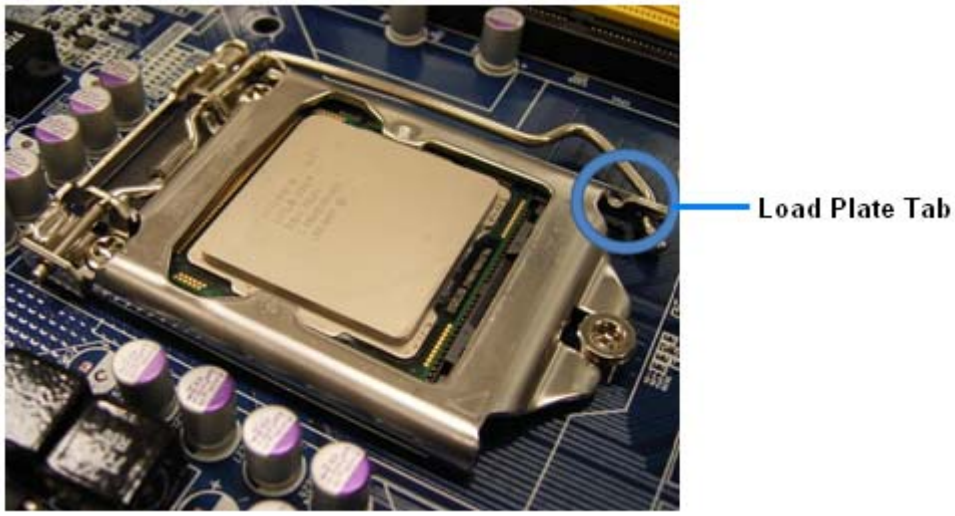
6. Visually inspect if the CPU is seated into the CPU socket evenly. The “Socket Alignment keys” should fit into the CPU notches.



7. Close the “CPU Socket Cover” by lowering down the “CPU Socket Lever”. Make sure the “CPU Socket Front Plates” are sliding underneath the “Shoulder Screw Cap”.



8. Secure the “CPU Socket Cover” by keep pressing down the “CPU Socket Lever” and move it toward and underneath the “Load Plate Tab”.



The CPU fits in only one correct orientation, DO NOT force the CPU into the socket. Otherwise, it might damage the CPU and/or the CPU socket.

1.6.2 Installing the CPU Heatsink and Fan

The Intel LGA1156 processor requires a specially designed heatsink and fan assembly to ensure optimum thermal condition and performance.

- When you purchase a boxed Intel® processor, the package includes the CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use only Intel®-certified multi-directional heatsink and fan.
- Your Intel® LGA1156 heatsink and fan assembly comes in a push-pin design and requires no tool to install.
- If you purchased a separate CPU heatsink and fan assembly, make sure that:

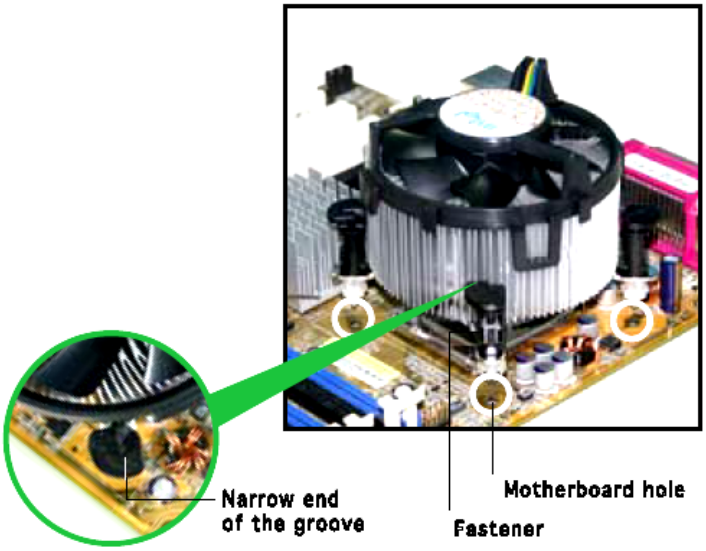
  a. The CPU heatsink and fan assembly is designed to withstand the "TDP" (Thermal Dissipation Power) specified by Intel specification of corresponding CPU that you are going to install.

  b. You have properly applied an even layer of Thermal Interface Material to between the CPU heatsink and the top of CPU before you install the heatsink and fan assembly (please check with your CPU fan/heatsink vendor for details).

NOTE: Make sure that you have installed the mainboard to the chassis before you install the CPU fan and heatsink assembly.

To install the CPU heatsink and fan:

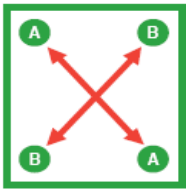
1. Place the CPU heatsink on top of the installed CPU, making sure that the four fasteners match the holes on the mainboard.

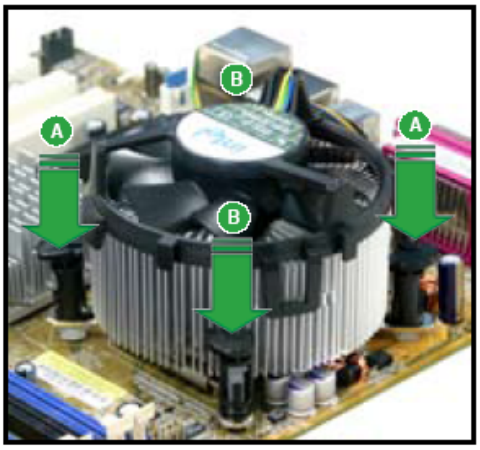


NOTE: Orient the heatsink and fan assembly such that the CPU fan cable is closest to the CPU fan connector).

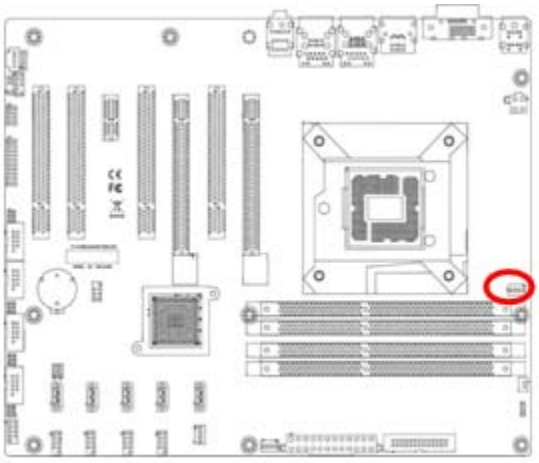
Make sure to orient each fastener with the narrow end of the groove pointing outward. (The photo shows the groove shaded for emphasis.)

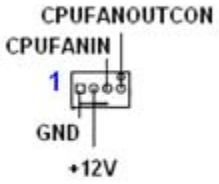
2. Push down two fasteners at a time in a diagonal sequence to secure the heatsink and fan assembly in place.





3. Connect the CPU fan cable to the connector on the motherboard labeled “CPU_FAN1”.





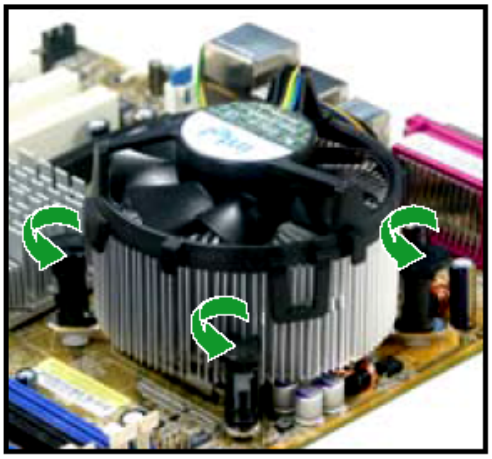
1. **Do not forget to connect the CPU fan connector. Insufficient air flow inside the system chassis may damage the mainboard components. Hardware monitoring errors can occur if you fail to plug in this connector.**
2. **Do not install any pin connector on the header “CPU_FAN1”, doing so may damage the mainboard.**

1.6.3 Uninstalling the CPU Heatsink and Fan.

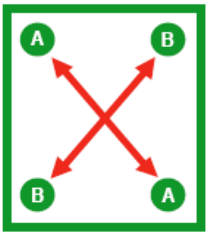
To uninstall the CPU heatsink and fan:

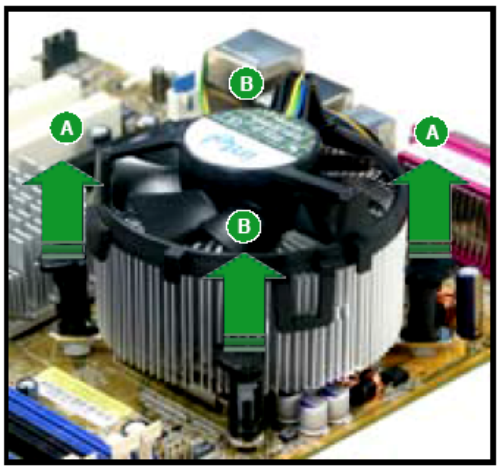
1. Disconnect the CPU fan cable from the connector on the mainboard.

2. Rotate each fastener counterclockwise.

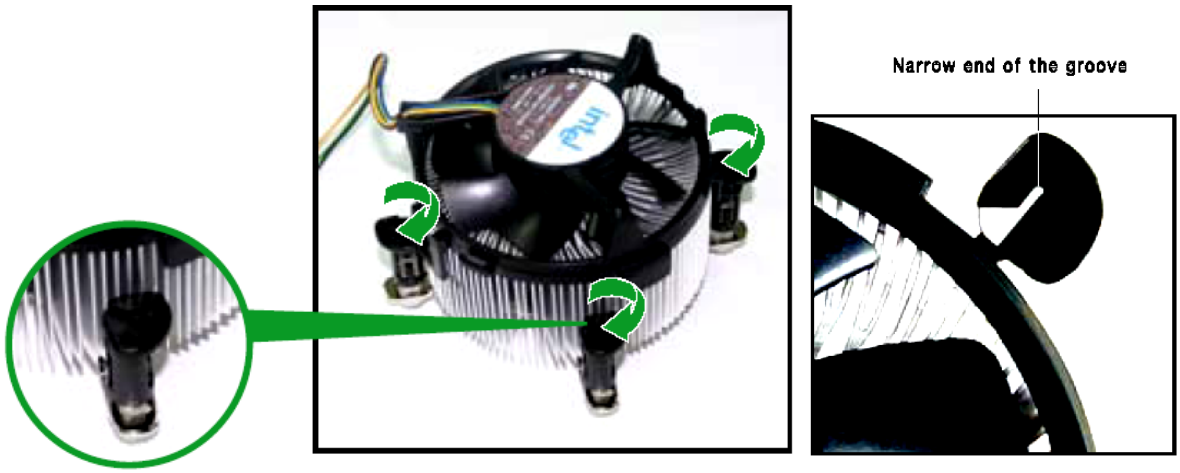


4. Pull up two fasteners at a time in a diagonal sequence to disengage the heatsink and fan assembly from the mainboard.





5. Rotate each fastener clockwise to ensure correct orientation when reinstalling.



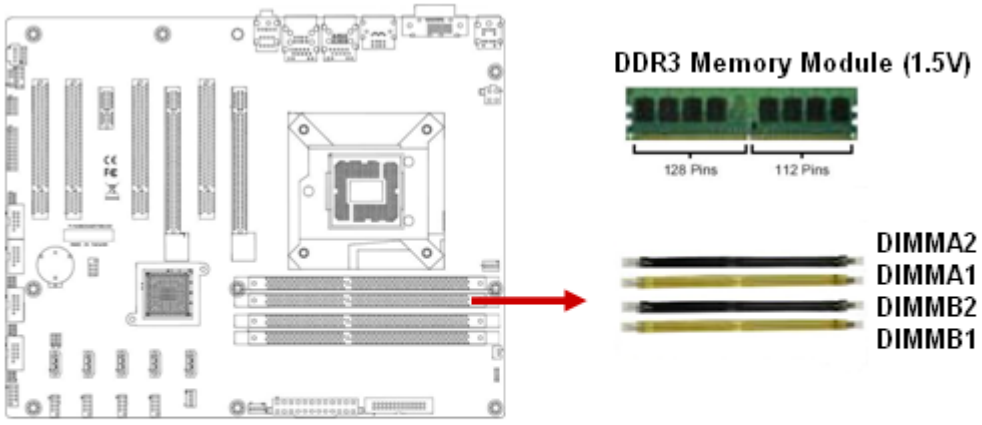
The narrow end of the groove should point outward after resetting. (The photo shows the groove shaded for emphasis.)

1.7 System Memory

1.7.1 Overview

The mainboard comes with four 240-pin Double Data Rate 3 (DDR3) Dual Inline Memory Modules (DIMM) slots. **You may ONLY use 1066MHz (PC3-8500), or 1333MHz (PC3-10600); Non-ECC, Un-buffered 1.5V DDR3 memory modules on this board (4GB maximum for each slot).**

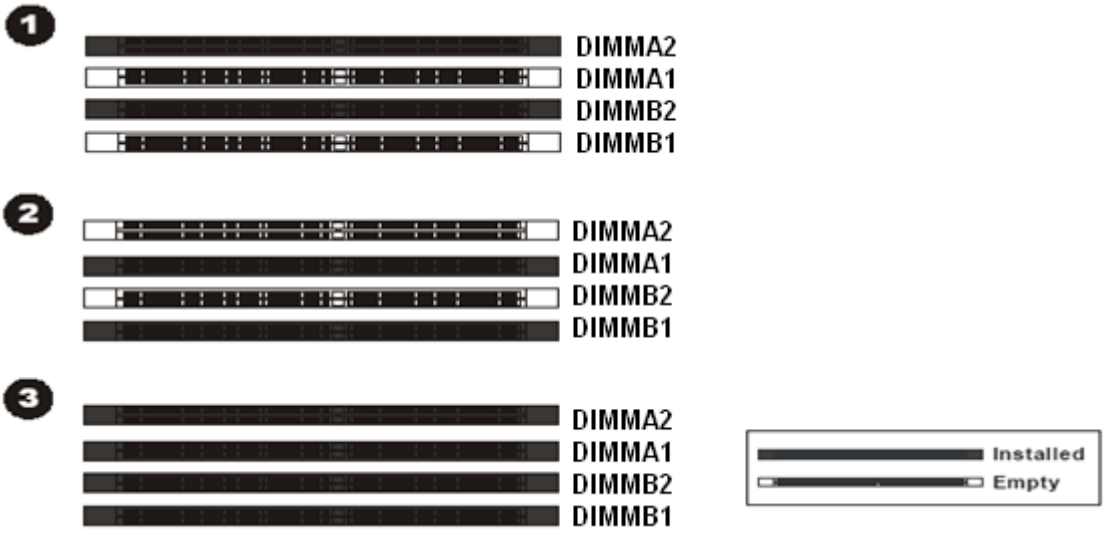
DDR3 DIMMs are notched differently to prevent installation on a DDR2 DIMM socket. The following figure illustrates the location of memory slots.



Channel	Socket
Channel A	DIMMA1 & DIMMA2
Channel B	DIMMB1 & DIMMB2

1.7.2 Dual-Channel Mode Population Rule

In Dual-Channel mode, the memory modules can transmit and receive data with two data bus lines simultaneously. Enabling Dual-Channel mode can enhance the system performance. Please refer to the following illustrations for population rules under Dual-Channel mode.

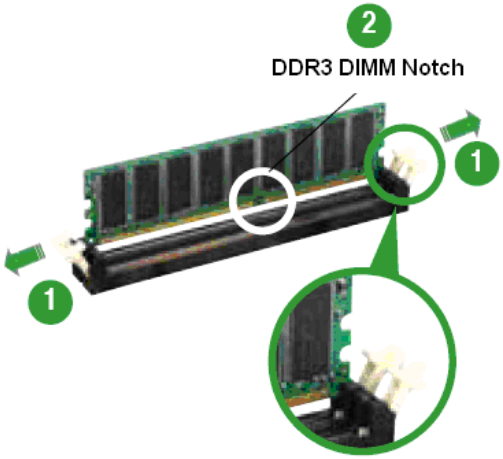


- **When install only one DDR3 memory module, install it on "DIMMA1" slot ONLY.**
- **When install only two DDR3 memory module, install them on "DIMMA1" and "DIMMB1" slots ONLY.**
- **In dual-channel configurations, install only identical (the same type, and size) DDR3 memory module pairs for each channel. For instance, DIMMA1 paired with DIMMB1; DIMMA2 paired with DIMMB2.**
- **Always install DIMMs with the same CAS latency. For optimum compatibility, it is recommended that you obtain the exact same model of memory modules from the same vendor.**

1.7.3 Installing DIMM

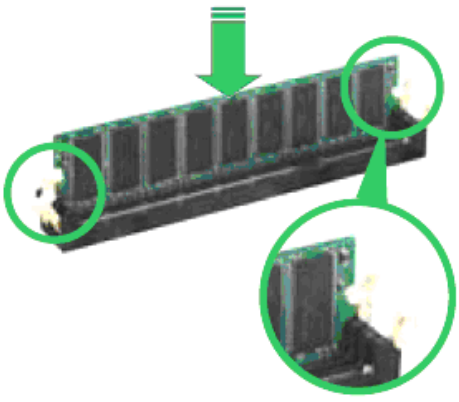
Make sure to unplug the power supply before adding or removing DIMMS or other peripherals from the system. Failure to do so may cause severe damage to both the mainboard and the peripherals.

1. Unlock a DIMM socket by pressing the retaining clips outward.
2. Align a DIMM on the socket such that the notch on the DIMM matches the break on the socket.



Unlocked Retaining Clip

3. Firmly insert the DIMM into the socket until the retaining clips snap back in place and the DIMM is properly seated.

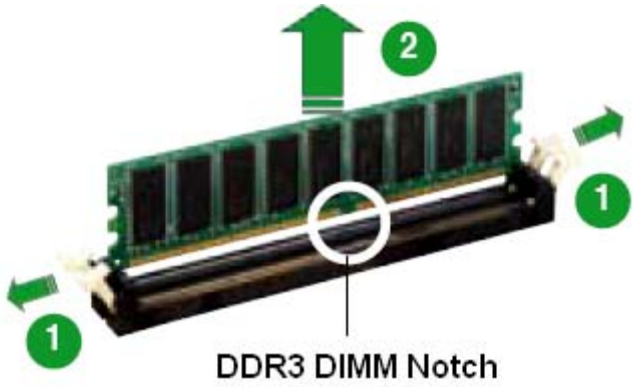

Locked Retaining Clip

1. **A DDR3 memory module is keyed with a notch so that it fits in only one direction.**
2. **DO NOT force the memory module into the socket in order to avoid damaging the memory module and the slot.**
3. **DDR3 memory modules are not interchangeable with DDR or DDR2.**
4. **DDR3 standard IS NOT backward compatible. You shall only install the DDR3 memory modules on this mainboard.**
5. **To enable the system boot-up successfully, always install the memory module into the DMMA1 slot first.**

1.7.4 Removing DIMM

Follow these steps to remove a DIMM.

1. Simultaneously press the retaining clips outward to unlock the DIMM.



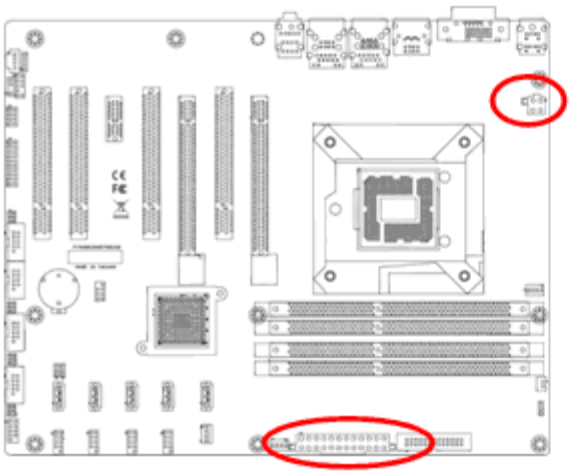
2. Remove the DIMM from the socket.

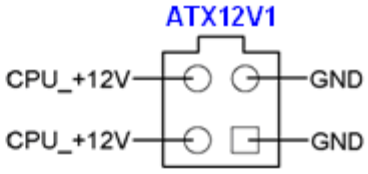
1.8 Power Supply

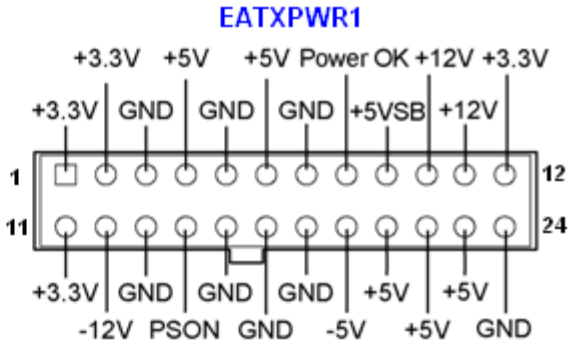
1.8.1 ATX Power Connectors: EATXPWR1, ATX12V1

These ATX power connectors provide connections from power supply unit (PSU) to the mainboard. Both connectors need to be installed in order for the mainboard to function properly. The power supply plugs are designed to fit with these ATX power connectors in one orientation only. To connect these power supply plugs; find the proper orientation first, and then push down the power supply plugs firmly until the connectors are completely fit.

If you'd like to use the 20-pin ATX power supply, please align the 20-pin power connector from PSU to pin 1 & pin 13 of "EATXPWR1". There is also a foolproof design on pin 11, 12, 23, & 24 to avoid wrong installation.



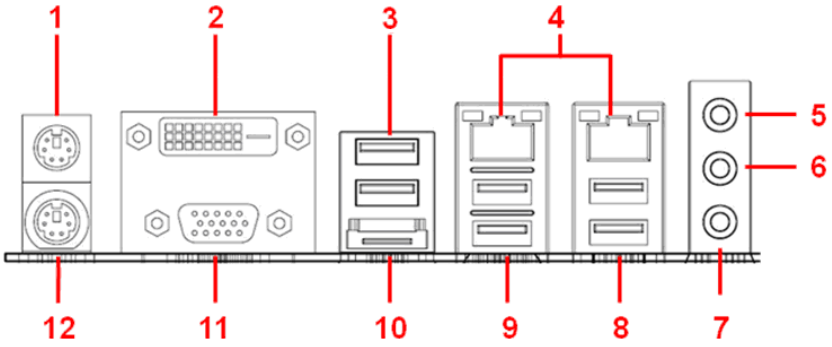


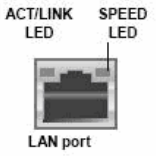


1. **It is recommended that you use a power supply unit (PSU) that complies with ATX 12V specification 2.0 (or later version) and provides a minimum power of 500W. If you are planning to fully loaded the slots and/or use a PCI-E x16 graphic card, a power supply with minimum power of 600W or more might be needed.**
2. **Do not forget to connect the 4-pin "ATX12V1" power plug; otherwise, the system will not boot.**
3. **Use of a PSU with a higher power output is recommended when configuring a system with more power-consuming devices. The system may become unstable or may not boot if the power supply is inadequate.**

1.9 Back Panel

1.9.1 Back Panel Connectors

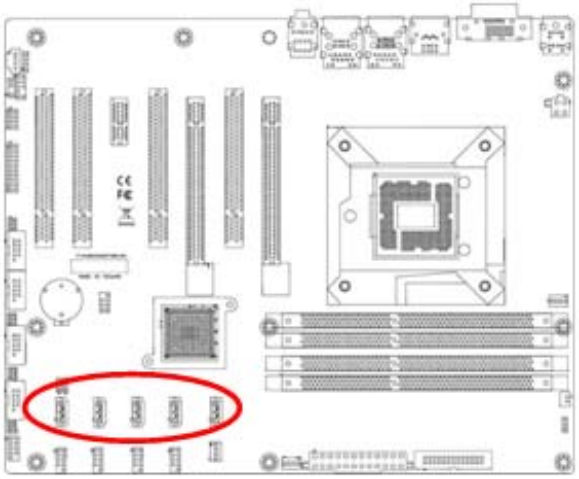


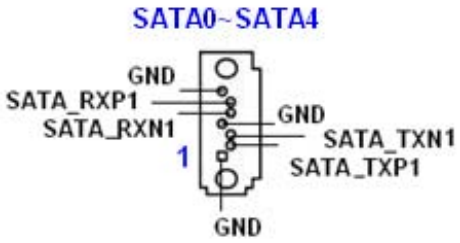
<table>
<tr><th>Item</th><th>Name</th><th>Function</th><th>Description</th></tr>
<tr><td>1</td><td>KBMS1</td><td>PS/2 Mouse Connector</td><td>This port is for a PS/2 mouse.</td></tr>
<tr><td>2</td><td>DVI</td><td>DVI Video Port</td><td>DVI-D 24-Pin Connector.</td></tr>
<tr><td>3</td><td>USB45</td><td>USB 2.0 Connectors</td><td>These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB2.0 devices.</td></tr>
<tr><td>4</td><td>LAN1/ LAN2</td><td>Gigabit LAN (RJ-45) Connectors
  </td><td>This port allows Gigabit connection to a Local Area Network (LAN) through a network hub. Refer to the table below for the LAN port LED indications.
<table>
<tr><td colspan="2">ACT/Link LED</td><td colspan="2">Speed LED</td></tr>
<tr><td>Status</td><td>Description</td><td>Status</td><td>Description</td></tr>
<tr><td>OFF</td><td>No link</td><td>OFF</td><td>10Mbps connection</td></tr>
<tr><td>Orange</td><td>Linked</td><td>Orange</td><td>100Mbps connection</td></tr>
<tr><td>Blinking</td><td>Data activity</td><td>Green</td><td>1Gbps connection</td></tr>
</table></td></tr>
<tr><td>5</td><td>AUDIO1</td><td>Line-in port (Light blue)</td><td>This port connects a tape, CD, DVD player, or other audio sources.</td></tr>
<tr><td>6</td><td>AUDIO1</td><td>Line-out port (Lime)</td><td>This port connects a headphone or a speaker. In 4-channel, 6-channel, and 8-channel configuration, the function of this port becomes Front Speaker Out.</td></tr>
<tr><td>7</td><td>AUDIO1</td><td>Microphone port (Pink)</td><td>This port connects a microphone.</td></tr>
<tr><td>8</td><td>USB23</td><td>USB 2.0 Connectors</td><td>These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.</td></tr>
</table>

Item	Name	Function	Description
9	USB01	USB 2.0 Connectors (USB 3.0 Optional)	These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
10	ESATA	ESATA Connector	This port connects to an ESATA device (ESATA cable required).
11	VGA	VGA Video Port	This 15-pin port is for a VGA monitor or other VGA-compatible devices.
12	KBMS1	PS/2 Keyboard Connector	This port is for a PS/2 keyboard.

1.10 Connectors/ Headers

1.10.1 Serial ATA Connectors: SATA0, SATA1, SATA2, SATA3, SATA4

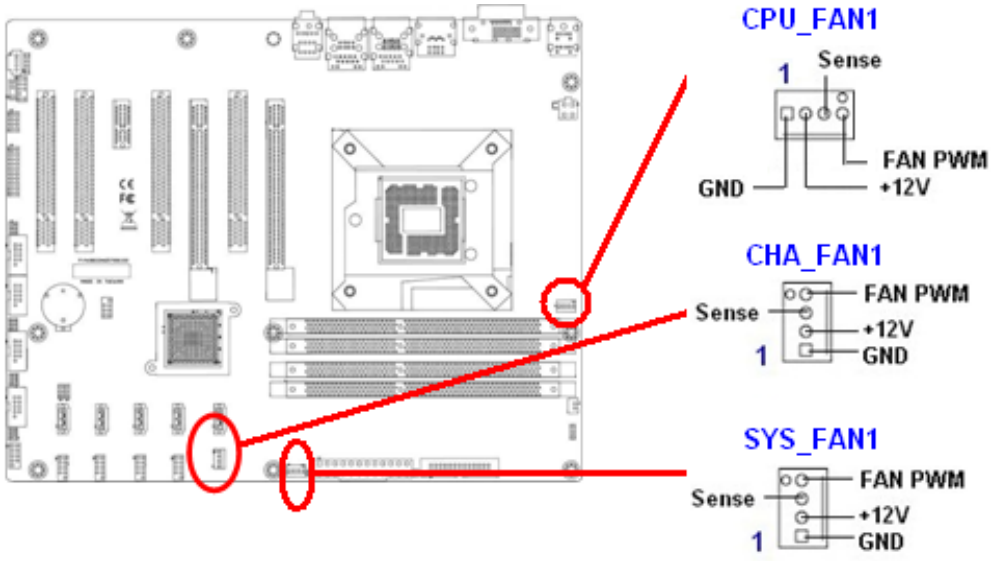




Please do not fold the Serial ATA cable into 90-degree angle. Otherwise, data loss may occur during data transmission.

1.10.2 Fan Power Connectors: CPU_FAN1, CHA_FAN1, SYS_FAN1

The fan power connectors support system cooling fan with +12V. When connecting the wire to these fan connectors, please note that the red wire is designated as “Power” and should be connected to “+12V” pin; the black wire is designated as “Ground” and should be connected to “GND”. In order to take the advantage of System Hardware Monitor, be sure to use the fan which is specifically designed with speed sensor.

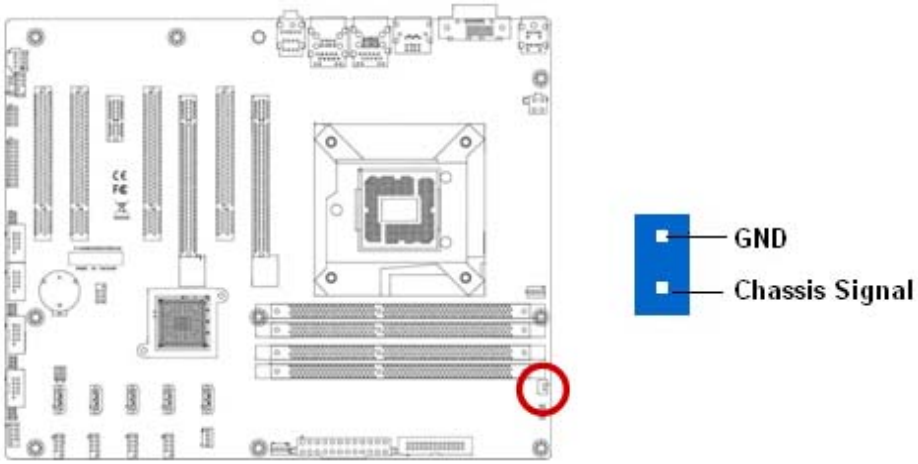


Please refer to the recommended CPU fans at processor’s official website or consult with the vendor for proper CPU cooling fan.

1.10.3 Chassis Intrusion Switch Connector: JCASE1

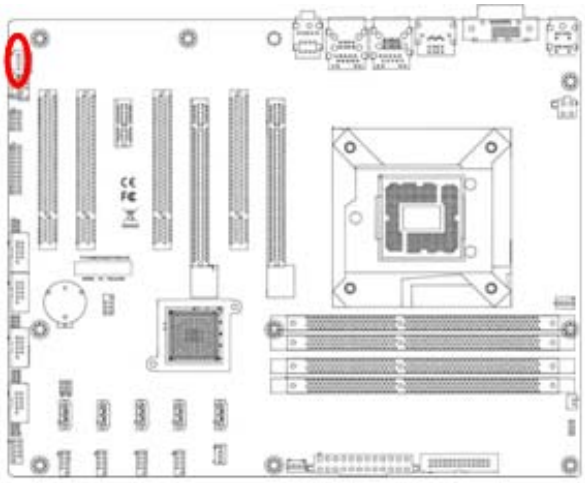
This connector connects to a 2-pin chassis switch. If the chassis is opened, the switch will be short. The system will record this status and show a warning message on the screen.

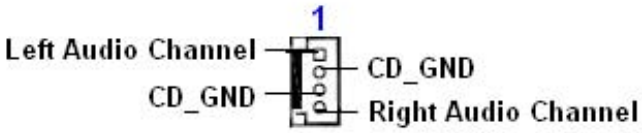
To clear the warning message, you must enter the BIOS and clear the record.



1.10.4 CD-In Connector: CDIN1

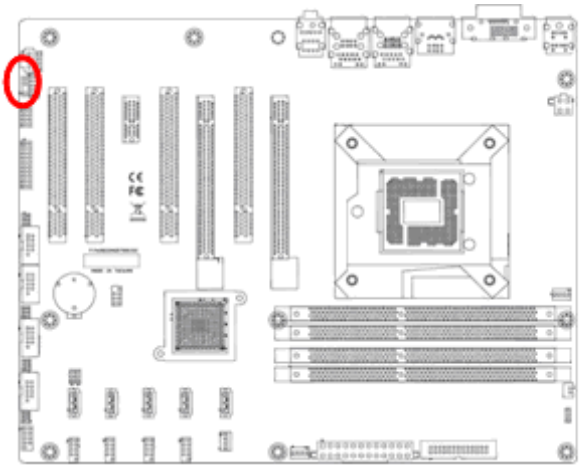
This connector is provided for external audio input.

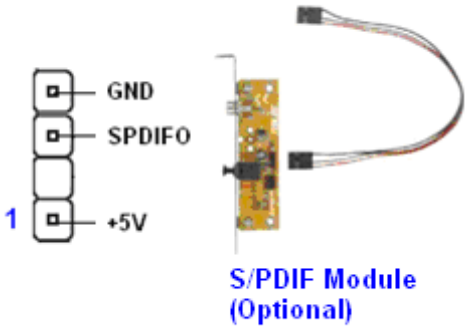




1.10.5 S/PDIF-Out Connector: SPDIF_OUT1

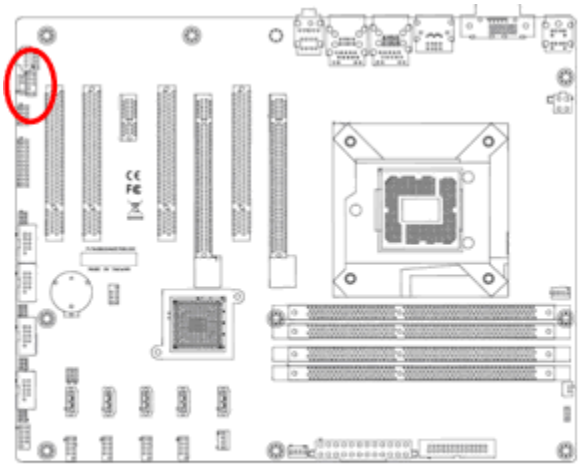
This connector is used to connect S/PDIF (Sony & Philips Digital Interconnect Format) interface for digital audio transmission.

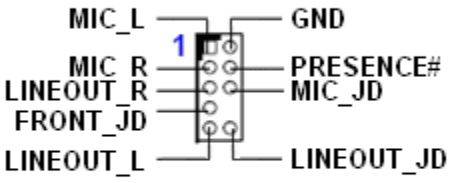




1.10.6 Front Panel Audio Connector: FPAUD1

This connector allows you to connect the front panel audio and is compliant with Intel® Front Panel I/O Connectivity Design Guide.



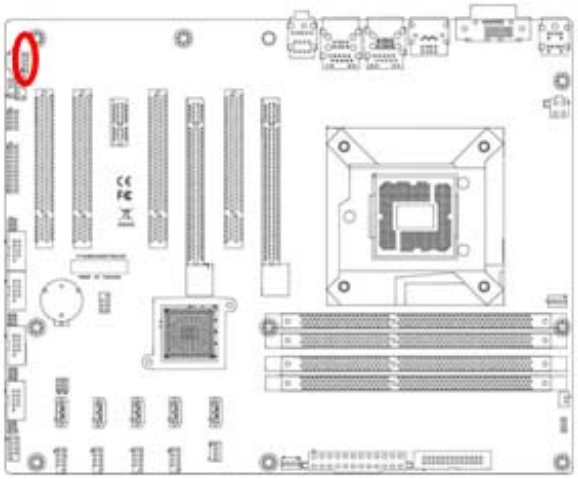


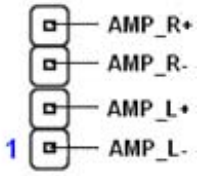
HD Audio Pin Definition

PIN	SIGNAL	DESCRIPTION
1	MIC_L	Microphone - Left channel
2	GND	Ground
3	MIC_R	Microphone - Right channel
4	PRESENCE#	Active low signal-signals BIOS that a High Definition Audio dongle is connected to the analog header. PRESENCE# = 0 when a High Definition Audio dongle is connected
5	LINE out_R	Analog Port - Right channel
6	MIC_JD	Jack detection return from front panel microphone JACK1
7	Front_JD	Jack detection sense line from the High Definition Audio CODEC jack detection resistor network
8	NC	No control
9	LINE out_L	Analog Port - Left channel
10	LINEout_JD	Jack detection return from front panel JACK2

1.10.7 Amplifier Connector: JAMP1

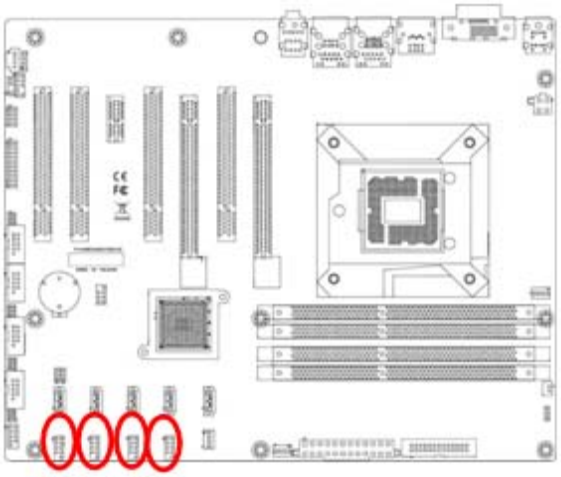
This header provided amplified audio signals to external speakers (2-channels). The dB level can be adjusted under BIOS.

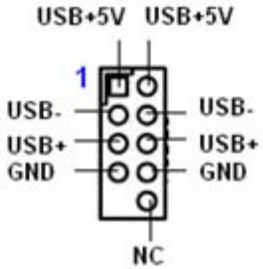




1.10.8 Front USB2.0 Headers: USB67, USB89, USB1011, USB1213

This connector is compliant with Intel® I/O Connectivity Design Guide, which is ideal for connecting high-speed USB peripherals such as USB HDD, USB digital cameras, USB MP3 players, USB printers, etc.

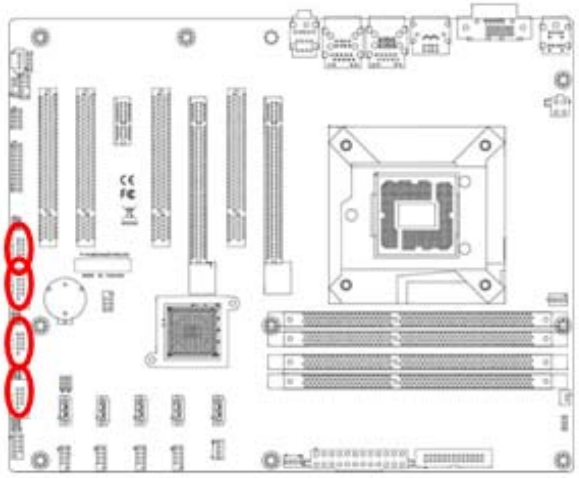


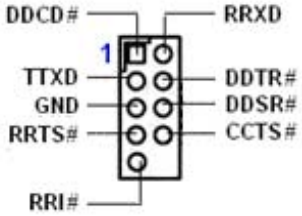


Be sure the pins of VCC and GND is connected to the connector correctly. Otherwise, it may cause damage to the USB port and/or the connected USB device.

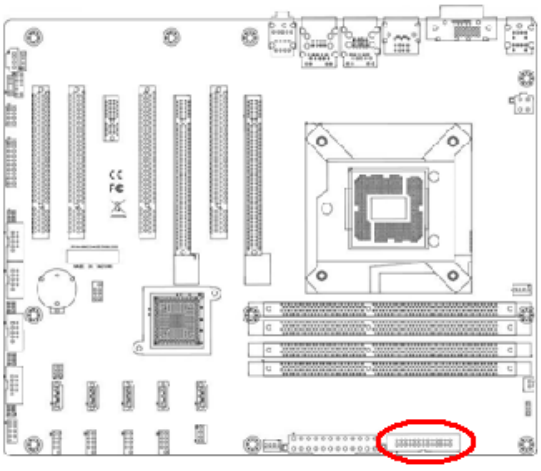
1.10.9 Serial Port Connectors: COM1, COM2, COM3, COM4

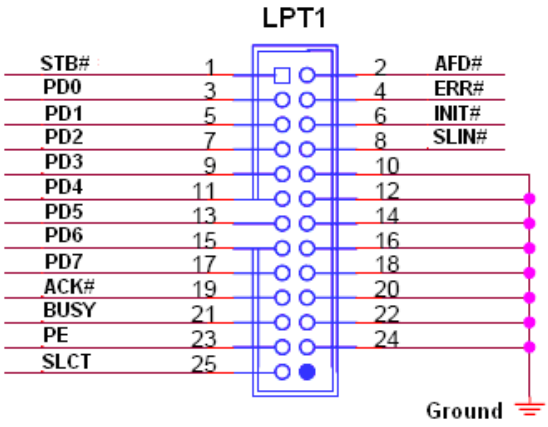
This connector is a 16550A high speed communication port that sends/receives 16 byte FIFOs.





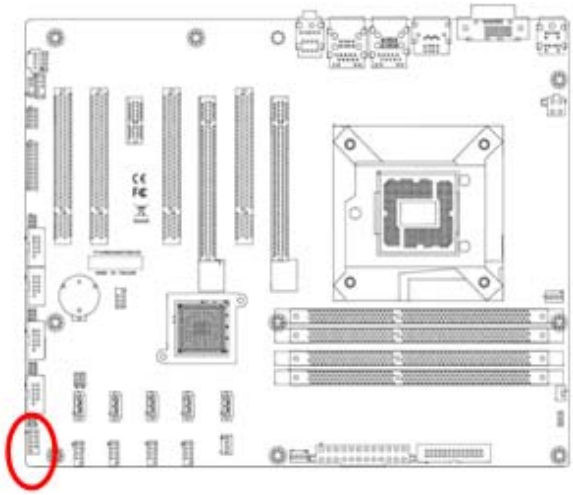
1.10.10 LPT Port Connector: LPT1

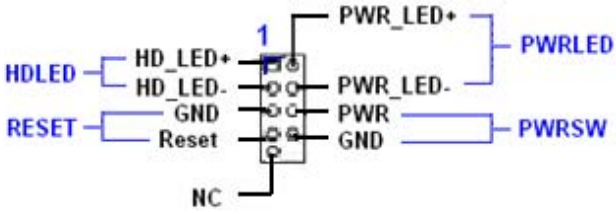




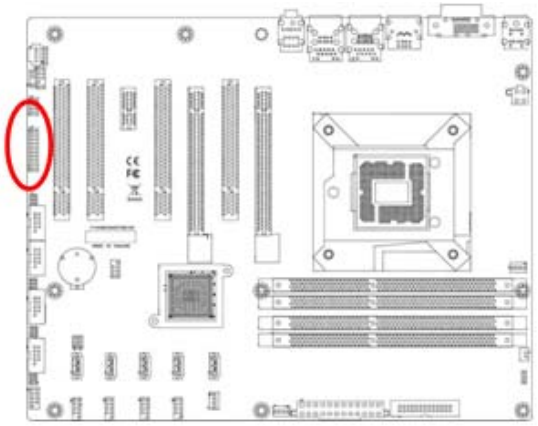
1.10.11 Front Panel Connectors: F_PANEL1

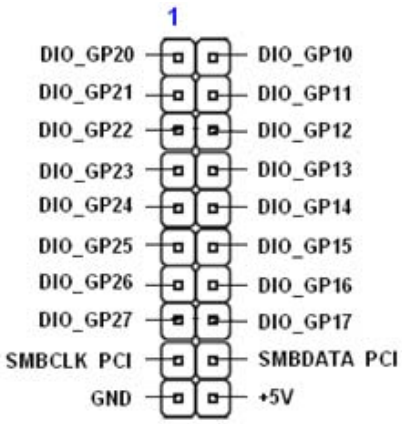
These connectors are for electrical connections to the front panel switches and LEDs. The “F_PANEL1” connector is compliant with Intel® Front Panel I/O Connectivity Design Guide.





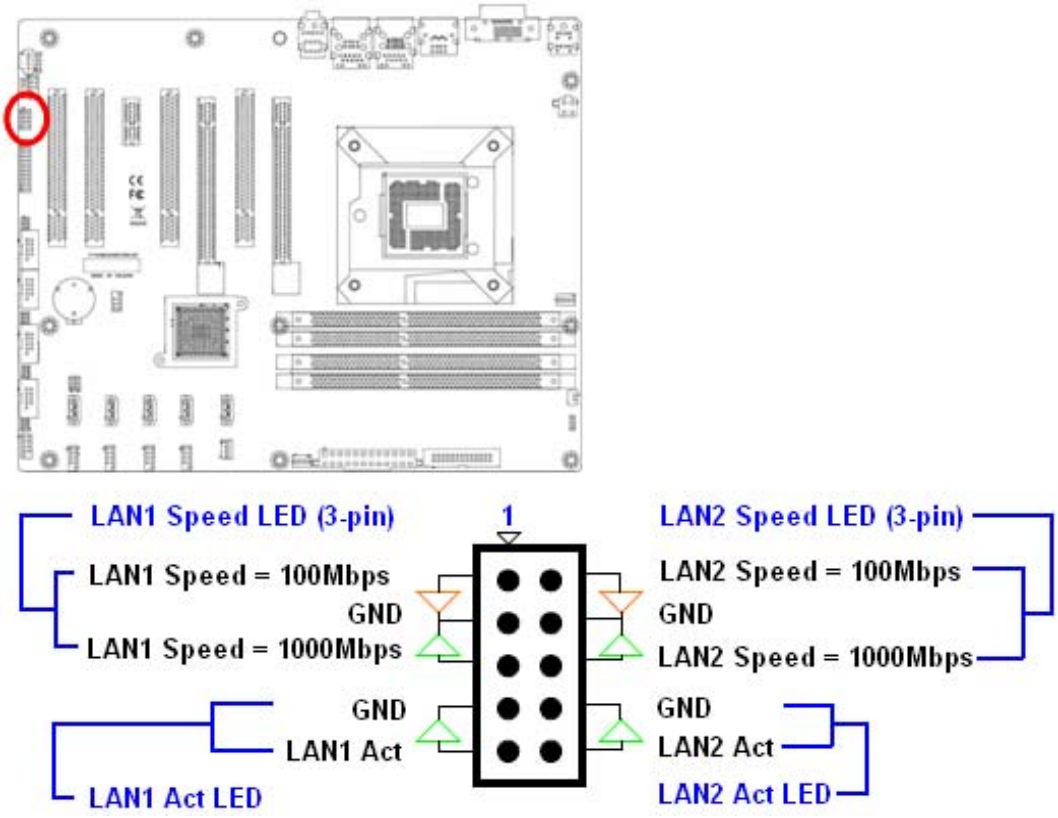
1.10.12 Digital I/O Connectors: DIO_CN1





1.10.13 LANLED Header: LANLED1

The “LANLED1” header provides the option for front panel to display the LED status simultaneously with the corresponding RJ45 port. For the LAN speed LED connection, a “Dual-band Common Cathode LED” (3-pin LED) is recommended.



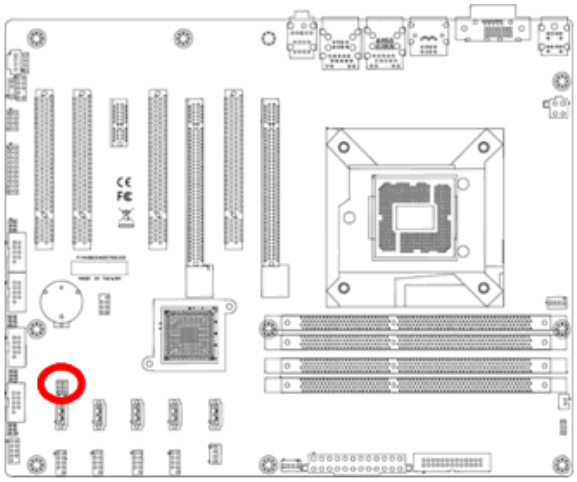
1.11 Jumpers

1.11.1 Clear CMOS Jumper: JCMOS1

There is a CMOS RAM onboard that has a power supply from an external battery to keep the data of system configuration.

For normal state (default), the jumper is set on pin location 1 and 2.

To clear the CMOS, set the jumper to pin location 2 and 3 for at least 30 seconds while the system is off.

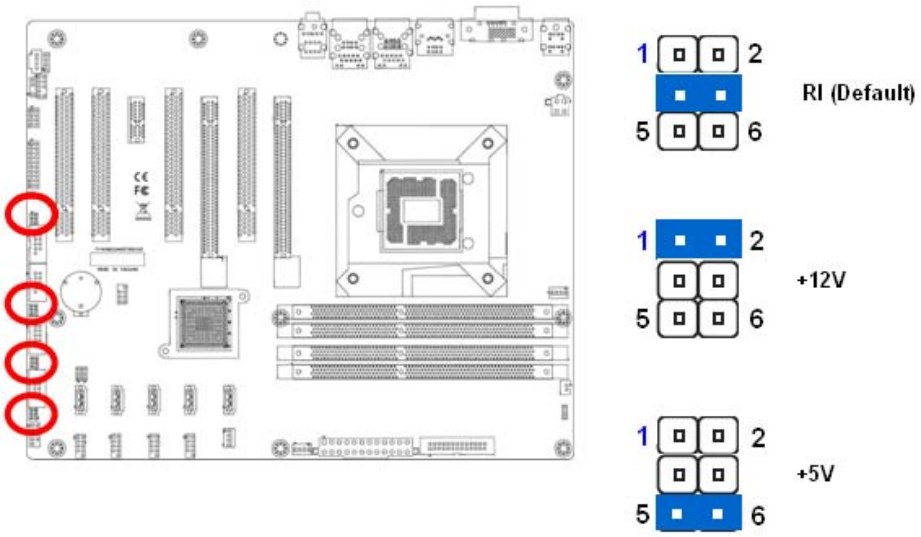


1. You can clear CMOS by shorting pin 2-3 for at least 30 seconds (while the system is OFF), then place the jumper back to pin 1-2 for normal operation.

2. Avoid clearing the CMOS while the system is ON; this will damage the mainboard.

1.11.2 COM Port Ring-in/ +12V/ +5V Power Select: JCOMPWR1, JCOMPWR2, JCOMPWR3

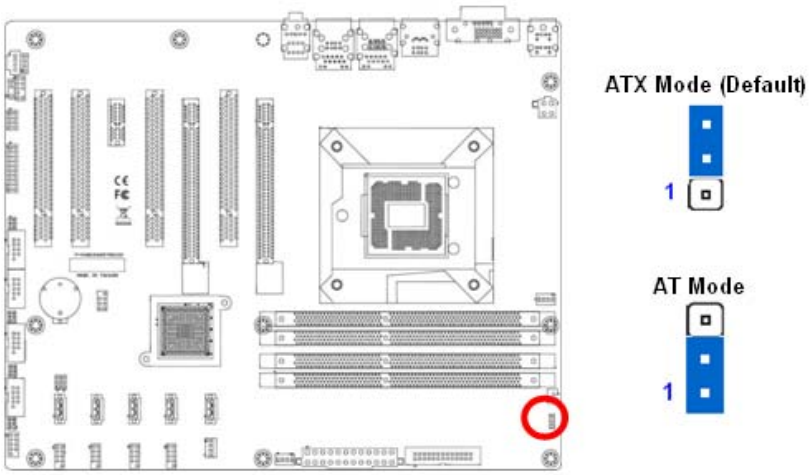
These headers provide ring-in, or 5V, or 12V on the com ports.



1.11.3 ATX/AT Mode Selection: PSON1

This header provides the option to boot the system in the form of ATX mode (default) or AT mode.

When the system is set in AT mode, the system power on/off will be controlled directly by the power switch on power supply. And some of the power saving modes will not function as ATX mode provided.



1.11.4 The Header: JSPI1

This header is reserved for factory use only.

1.12 The Expansion Slots

In the future, you may need to install expansion cards. The following sub-sections describe the expansion slots and the expansion cards that they support.

Make sure to unplug the power cord before adding or removing expansion cards. Failure to do so may cause you physical injury and damage mainrboard components.

1.12.1 Installation of Expansion Card

To install an expansion Card:

1. Before install the expansion card, read the documentation that came with it and make the necessary hardware setting for the card.
2. Remove the chassis cover (if the mainboard is installed in a chassis).
3. Remove the expansion slot bracket from the chassis on the slot that you intend to use. Keep the screw for later use.
4. Align the card connector with the slot and press it firmly until the card is completely seated on the slot.
5. Secure the card to the chassis with the screw that have been removed earlier (in step 3).
6. Place the chassis cover back on.

1.12.2 Setup An Expansion Card

After installing the expansion card, configure it by adjusting the software settings.

1. Turn on the system and change the BIOS settings if necessary. See Chapter 2 for information on BIOS setup.
2. Install the software drivers for the expansion card.

1.12.3 PCI (Peripheral Component Interconnect) Express Slot

The PCI Express slot supports the PCI Express interface expansion card.

- The PCI Express x16 (PCI-E x16) supports up to 4.0GB/s transfer rate.
- The PCI Express x8 (PCI-E x8) supports up to 2.0GB/s transfer rate.
- The PCI Express x4 (PCI-E x4) supports up to 1.0GB/s transfer rate.
- The PCI Express x1 (PCI-E x1) supports up to 250MB/s transfer rate.

1.12.3.1 PCI-E x 16 Slot: PCIEX16_1, PCIEX4_1

• The PCIEX16_1 slot supports PCI-E x16 graphic card.

- **When PCIEX16_1 slot installed with PCI-E x16 graphic card, there will be no video output from onboard CRT and DVI port.**

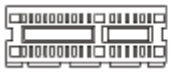
• The PCIEX4_1 supports PCI-E transfer rate **up to 4x ONLY.**

- **When PCIEX4_1 slot installed with PCI-E x4 or PCI-E x1 card, there will be no video output from onboard CRT and DVI port.**
- **When the PCI-E x16 graphic card is installed on PCIEX4_1 slot, since its maximum PCI-E transfer rate is up to 4x, its performance won't be as fast as the same graphic card installed on PCIEX16_1 slot.**
- **When install two PCI-E x16 graphic cards on PCIEX4_1 and PCIEX16_1 slots, it is recommended to use the same model of PCI-E x16 graphic cards.**

PCI Express x16 Slot

1.12.3.2 PCI-E x1 Slot: PCIEX1_1

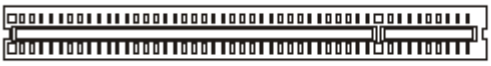
This slot supports PCI-E x1 cards.



PCI Express x1 Slot

1.12.3.3 PCI Slots: PCI1, PCI2, PCI3, PCI4

The PCI slot supports LAN card, SCSI card, USB card, and other add-on cards that comply with PCI specifications.



32-bit PCI Slot

1. **When adding or removing expansion cards, make sure the system power is OFF.**
2. **After the card is installed on the system, make the adjustments under system BIOS if necessary, then install the card driver provided by the card vendor under system OS.**
3. **When using PCI cards on shared slots, ensure that the card driver support "Share IRQ" or the PCI cards do not need IRQ assignments. Otherwise, conflicts will arise between the two PCI groups; marking the system unstable and the card inoperable.**

Chapter 2: Starting Up the System

2.1 Starting Up Your System

1. After all connections are made, close your computer case cover.
2. Be sure all the switches are off, and check that the power supply input voltage is set to the local voltage, usually in-put voltage is 220V~240V or 110V~120V depending on your country's voltage used.
3. Connect the power supply cord into the power supply located on the back of your system case according to your system user's manual.
4. Turn on your peripheral as following order:
   a. Your monitor.
   b. Other external peripheral (Printer, Scanner, External Modem etc…)
   c. Your system power. For ATX power supplies, you need to turn on the power supply and press the ATX power switch on the front side of the case.
5. The power LED on the front panel of the system case will light. The LED on the monitor may light up or switch between orange and green after the system is on. If it complies with green standards or if it is has a power standby feature. The system will then run power-on test. While the test are running, the BIOS will alarm beeps or additional message will appear on the screen.

   If you do not see any thing within 30 seconds from the time you turn on the power. The system may have failed on power-on test. Recheck your jumper settings and connections or call your retailer for assistance.

Beep	**Meaning**
One short beep when displaying logo	No error during POST
Long beeps in an endless loop	No DRAM install or detected
One long beep followed by three short beeps	Video card not found or video card memory bad
High frequency beeps when system is working	CPU overheated System running at a lower frequency

6. During power-on, press <Del> key to enter BIOS setup. Follow the instructions in BIOS SETUP.
7. **Power off your computer:** You must first exit or shut down your operating system before switch off the power switch. For ATX power supply, you can press ATX power switching after exiting or shutting down your operating system. If you use Windows Operating Systems, click **"Start"** button, click

“Shut down” and then click **“Shut down the computer”** The power supply should turn off after windows shut down.

Chapter 3: BIOS Setup

Warnining: Before flashing the BIOS, please be sure to make the following adjustments on the system:

1. **Fully disabled the iAMT feature (through Intel ME management utility during system post).**
2. **Flash the mainboard with memory module installed on memory slot "DIMMB2" ONLY. No memory module occupied on memory slots "DIMMA1", "DIMMA2" and "DIMMB1" during the BIOS flash process.**
3. **After the BIOS is flashed; shut down the system, then install the memory module(s) back to the desired memory slot(s).**
4. **Disconnect all power connections from power supply to the mainboard.**
5. **Clear the CMOS (For at least 30 seconds).**
6. **Reconnect all power connections from power supply to the mainboard.**
7. **When the system is booting first time after the new BIOS is flashed, it is recommended to enter the BIOS; load the option "Load Optimized Defaults", and then "Save and Exit Setup". NOT DOING SO MAY CAUSE THE FLASHED BIOS NOT TO FUNCTION PROPERLY.**

3.1 Introducing BIOS

The BIOS is a program located on a Flash Memory on the motherboard. This program is a bridge between motherboard and operating system. When you start the computer, the BIOS program gains control. The BIOS first operates an auto-diagnostic test called POST (power on self test) for all the necessary hardware, it detects the entire hardware device and configures the parameters of the hardware synchronization. Only when these tasks are completed done it gives up control of the computer to operating system (OS). Since the BIOS is the only channel for hardware and software to communicate, it is the key factor for system stability, and in ensuring that your system performance as its best.

In the BIOS Setup main menu of Figure 3-1, you can see several options. We will explain these options step by step in the following pages of this chapter, but let us first see a short description of the function keys you may use here:

- Press <Esc> to quit the BIOS Setup.
- Press ↑↓←→ (up, down, left, right) to choose, in the main menu, the option you want to confirm or to modify.
- Press <F10> when you have completed the setup of BIOS parameters to save these parameters and to exit the BIOS Setup menu.
- Press Page Up/Page Down or +/– keys when you want to modify the BIOS parameters for the active option.

3.2 Entering BIOS Setup Menu

Power on the computer and by pressing <DEL> immediately allows you to enter BIOS Setup Menu.

If you are not able to enter the BIOS menu but you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the “RESET” button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys.

The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.

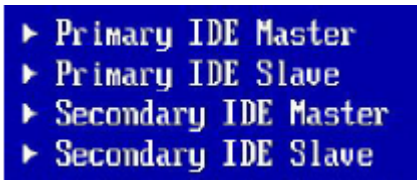
3.3 Getting Help

Main Menu

The main menu lists the setup functions you can make changes to. You can use the arrow keys to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Sub- Menu

If you find a right pointer symbol (as shown in the picture below) appears to the left of certain fields that means a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter. You can use arrow keys to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press the <ESC>.

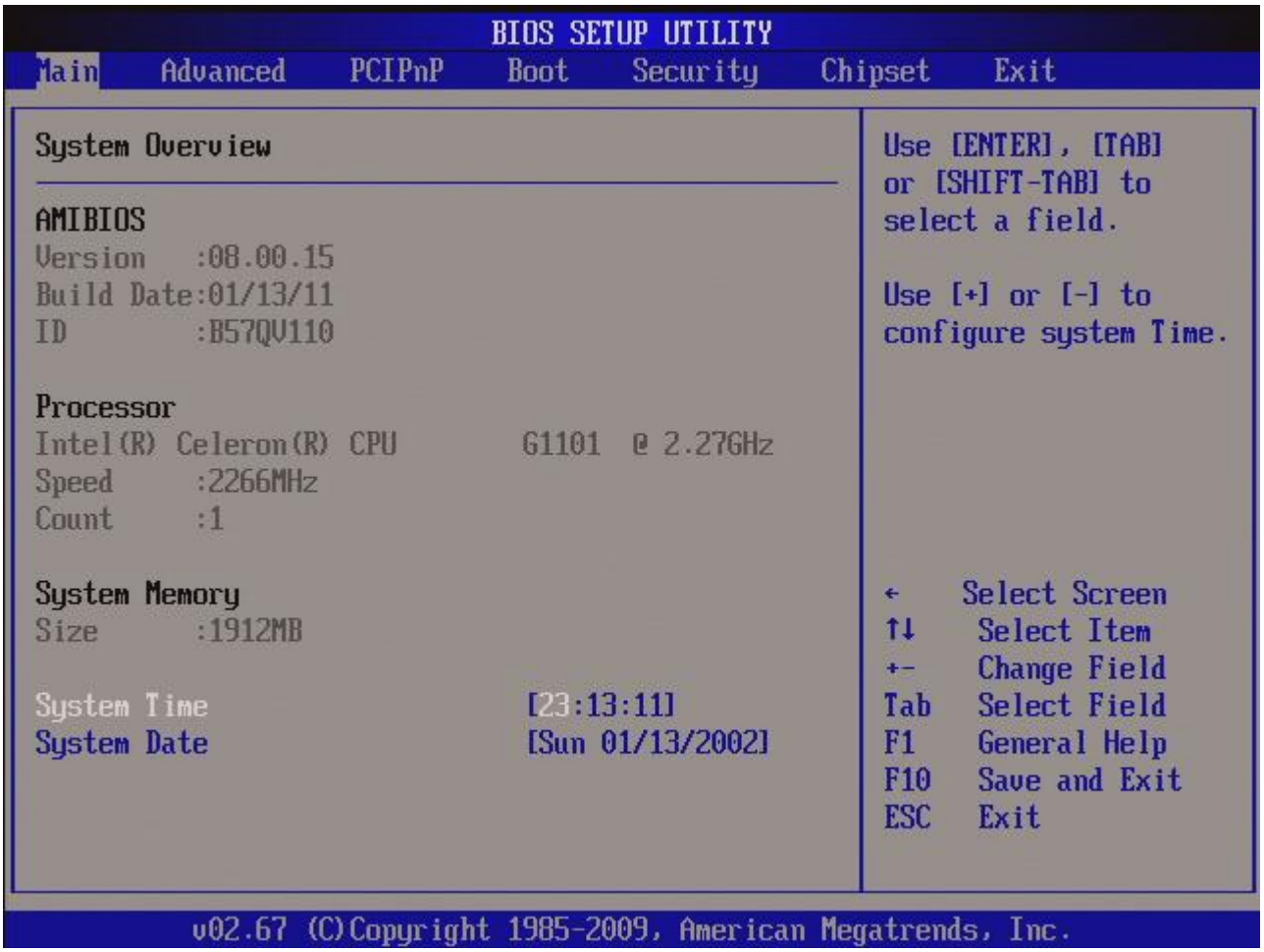


General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

3.4 Main Setup

When you first enter the Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the *Main* tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup screen is shown below.



- **System Time/System Date**

Use this option to change the system time and date. Highlight *System Time* or *System Date* using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.

NOTE: The time is in 24-hour format. For example, 5:30 A.M. appears as 05:30:00, and 5:30P.M. as 17:30:00.

3.5 Advanced BIOS Setup

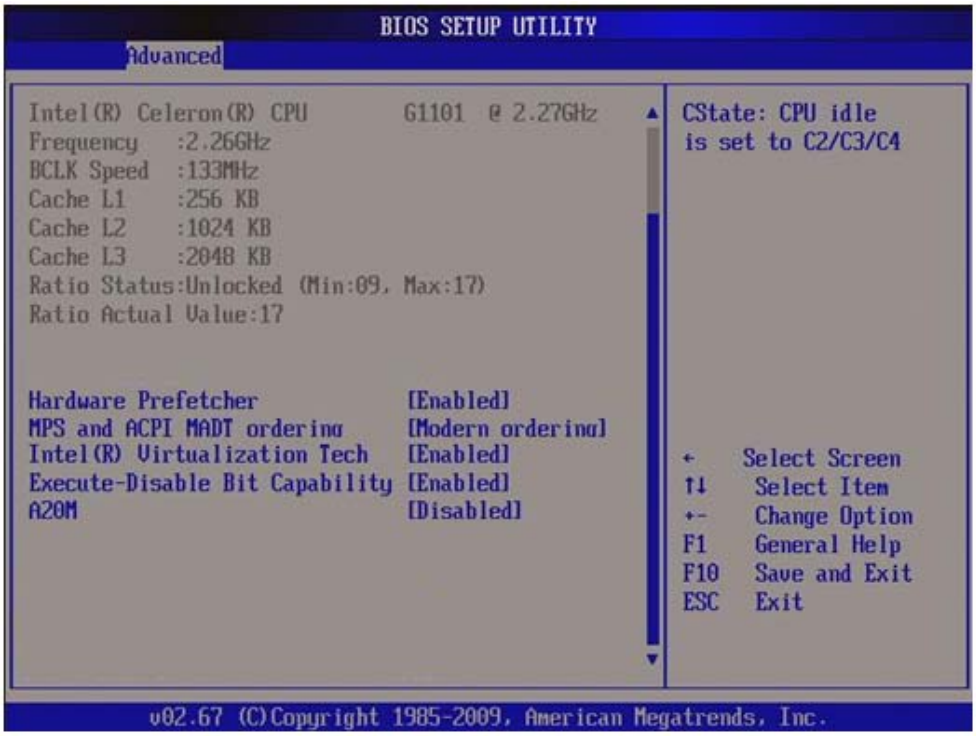
Select the *Advanced* tab from the setup screen to enter the Advanced BIOS Setup screen.

You can select any of the items in the left frame of the screen, such as SuperIO Configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screen is shown below.

The sub menus are described on the following pages.

3.5.1 CPU Configuration Setting

You can use this screen to select options for the CPU Configuration Settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on the following pages.



Hardware Prefetcher

Hardware Prefetcher is a technique that fetches instructions and/or data from memory into the CPU cache memory well before the CPU needs it, so that it can improve the load-to-use latency. You may choose to enable or disable it.

MPS and ACPI MADT ordering

MADT refers to Multiple APIC Description Table.

Intel® Virtualization Tech

Intel Virtualization Technology (Intel VT) is a set of hardware enhancements to Intel server and client platforms that provide software-based virtualization solutions. Intel VT allows a platform to run multiple operating systems and applications in independent partitions, allowing one computer system to function as multiple virtual systems.

Execute-Disable Bit Capability

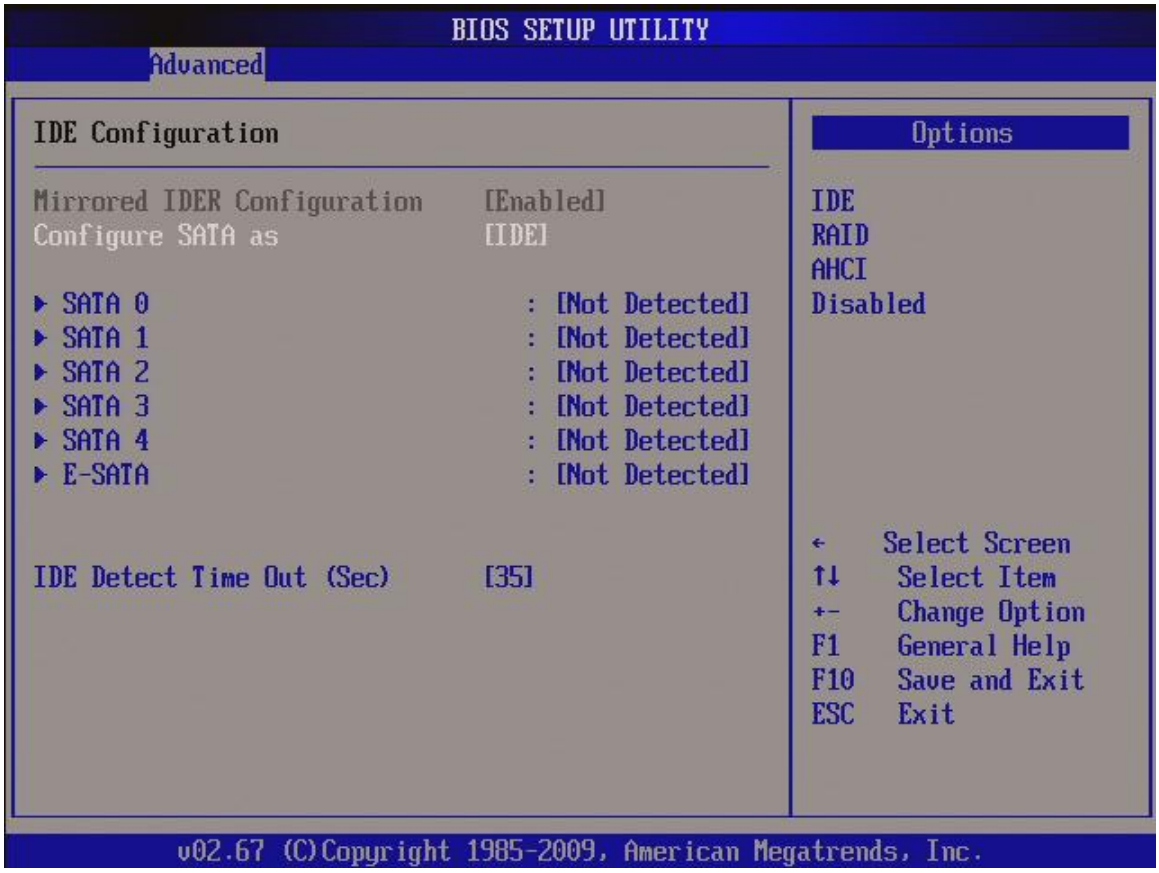
This item allows you to enable or disable the No-Execution page protection technology.

A20M

This makes legacy OS compatible with some APs.

3.5.2 IDE Configuration Setting

You can use this screen to select options for the IDE Configuration Settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on the following pages.



SATA Configuration

The choices of SATA configuration are Disabled, Compatible, and Enhanced.

Configure SATA as

This item allows to configure SATA as IDE, RAID, or AHCI.

Primary/Secondary IDE Master/Slave, Third/Fourth IDE Master

Select one of the hard disk drives to configure it. Press <Enter> to access its the sub menu. The options on the sub menu are described in the following sections.

IDE Detect Time Out (Sec)

Set this option to stop the AMIBIOS from searching for IDE devices within the specified number of seconds. Basically, this allows you to fine-tune the settings to allow for faster boot times. Adjust this setting until a suitable timing that can detect all IDE disk drives attached is found.

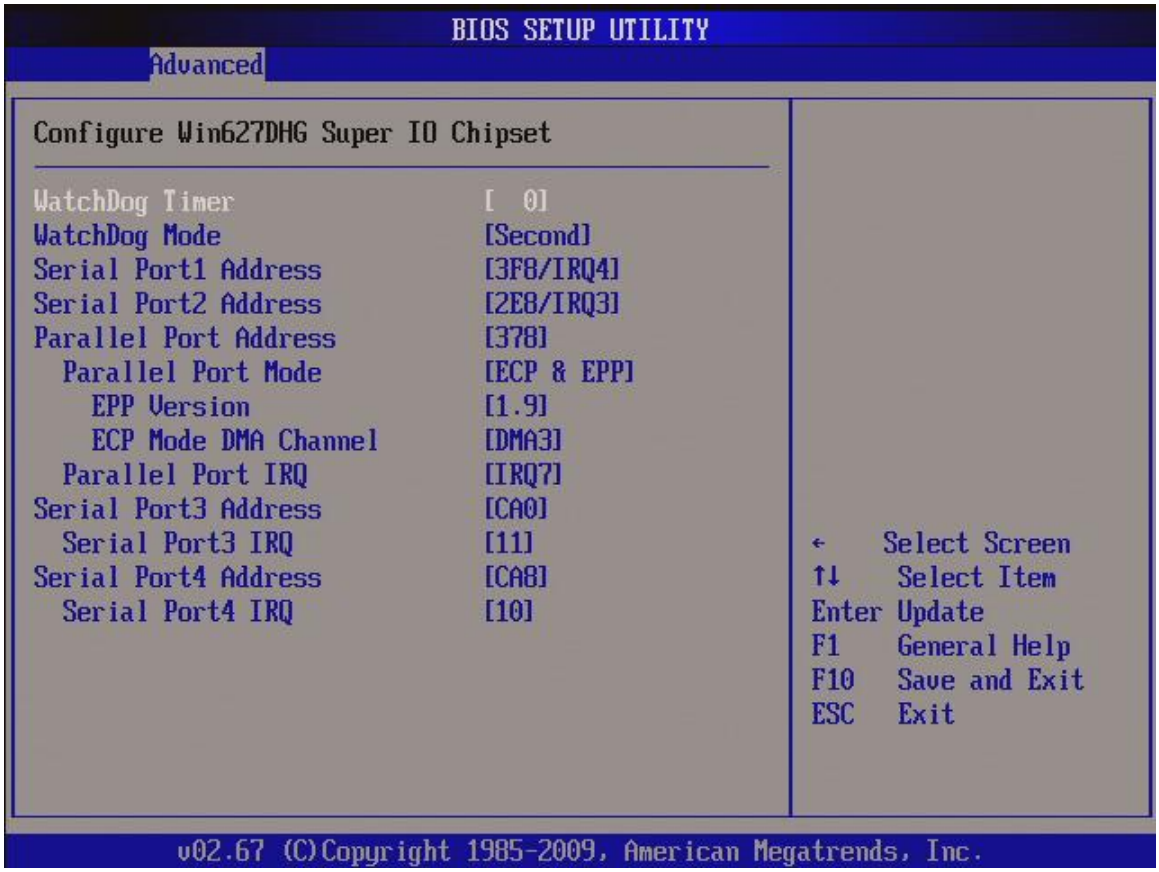
The default setting is *35*.

Option	Description
0	This value is the best setting to use if the onboard IDE controllers are set to a specific IDE disk drive in the AMIBIOS.
5	Set this value to stop the AMIBIOS from searching the IDE bus for IDE disk drives in five seconds. A large majority of ultra ATA hard disk drives can be detected well within five seconds.
10	Set this value to stop the AMIBIOS from searching the IDE bus for IDE disk drives in 10 seconds.
15	Set this value to stop the AMIBIOS from searching the IDE bus for IDE disk drives in 15 seconds.
20	Set this value to stop the AMIBIOS from searching the IDE bus for IDE disk drives in 20 seconds.
25	Set this value to stop the AMIBIOS from searching the IDE bus for IDE disk drives in 25 seconds.
30	Set this value to stop the AMIBIOS from searching the IDE bus for IDE disk drives in 30 seconds.
35	35 is the default value. It is the recommended setting when all IDE connectors are set to AUTO in the AMIBIOS setting.

Note: Different IDE disk drives take longer for the BIOS to locate than others do.

3.5.3 SuperIO Configuration

You can use this screen to select options for the Super I/O settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.



Serial Port1 Address

This option configures serial port 1 base addresses.

Serial Port2 Address

This option configures serial port 2 base addresses.

Parallel Port Address

This configures parallel port base addresses.

Parallel Port Mode

This item allows the user to set parallel port mode, and there are four options, [Bi-Directional] \ [ECP]\[EPP]\[ECP&EPP]

Serial Port 3 Address

This option configures serial port 3 base address.

Serial Port 3 IRQ

This option configures serial port 3 base IRQ**.**

Serial Port 4 Address

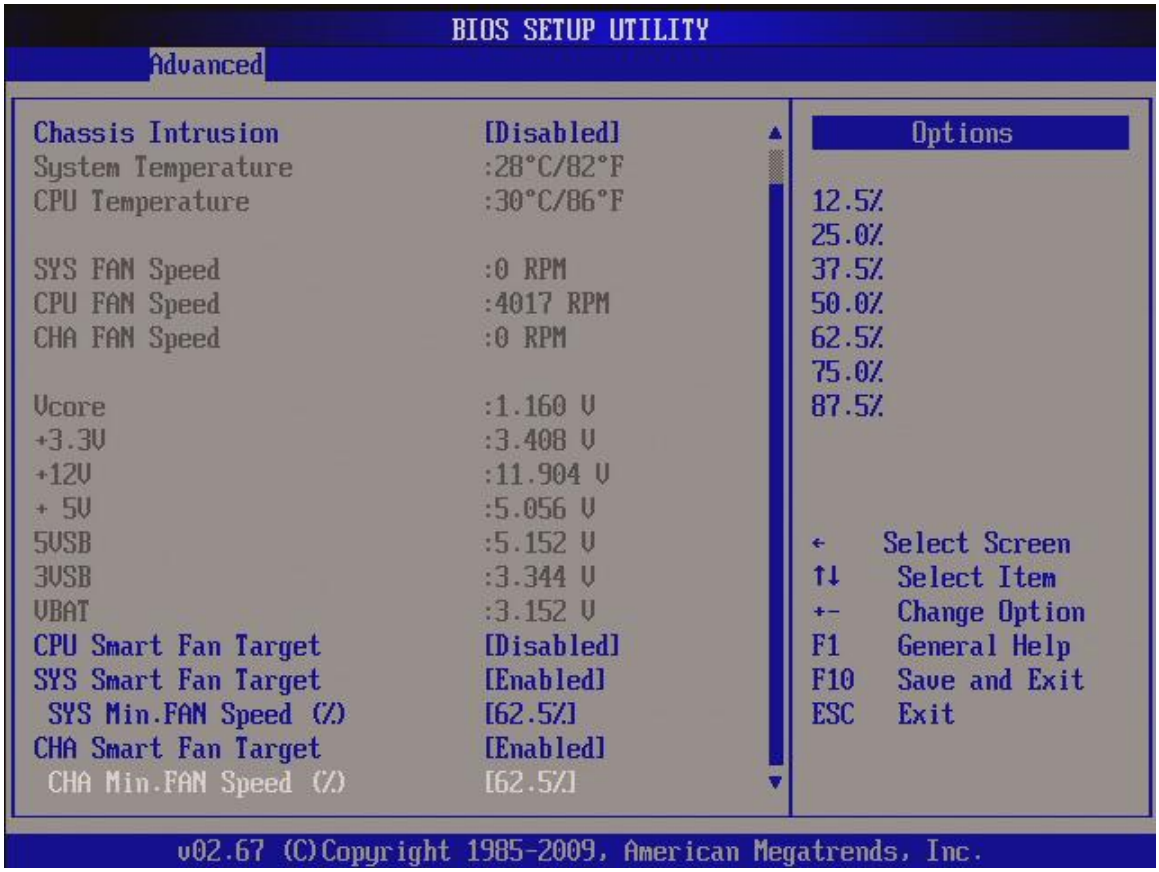
This option configures serial port 4 base address.

Serial Port 4 IRQ

This option configures serial port 4 base IRQ.

3.5.4 Hardware Health Configuration

You can use this screen to select options for the Hardware Health settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.



Chassis Intrusion

This item selects the chassis intrusion. The choices are Disabled or Enabled.

System Temperature

This shows you the current temperature of system.

CPU Temperature

This shows you the current CPU temperature.

SYS_FAN Speed

This shows the current CPU FAN operating speed.

CPU_FAN Speed

This shows the current System FAN operating speed.

CHA_FAN Speed

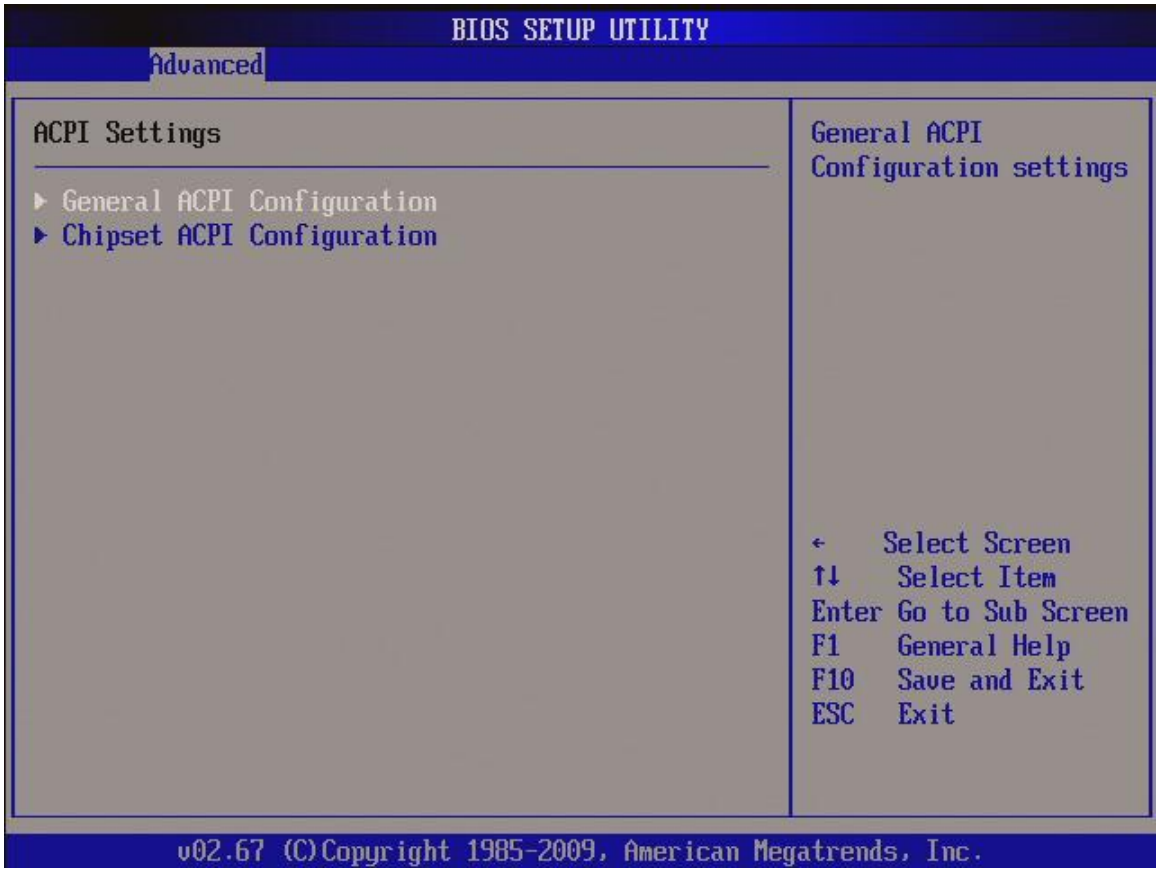
This shows the current Chassis FAN operating speed.

Vcore/ 3VCC/ +12V/ +5V/ 5VSB/ 3VSB/ VBAT

This shows the voltage of VCORE, 3VCC, +12V, +5V, 5VSB(V), 3VSB(V) and VBAT(V).

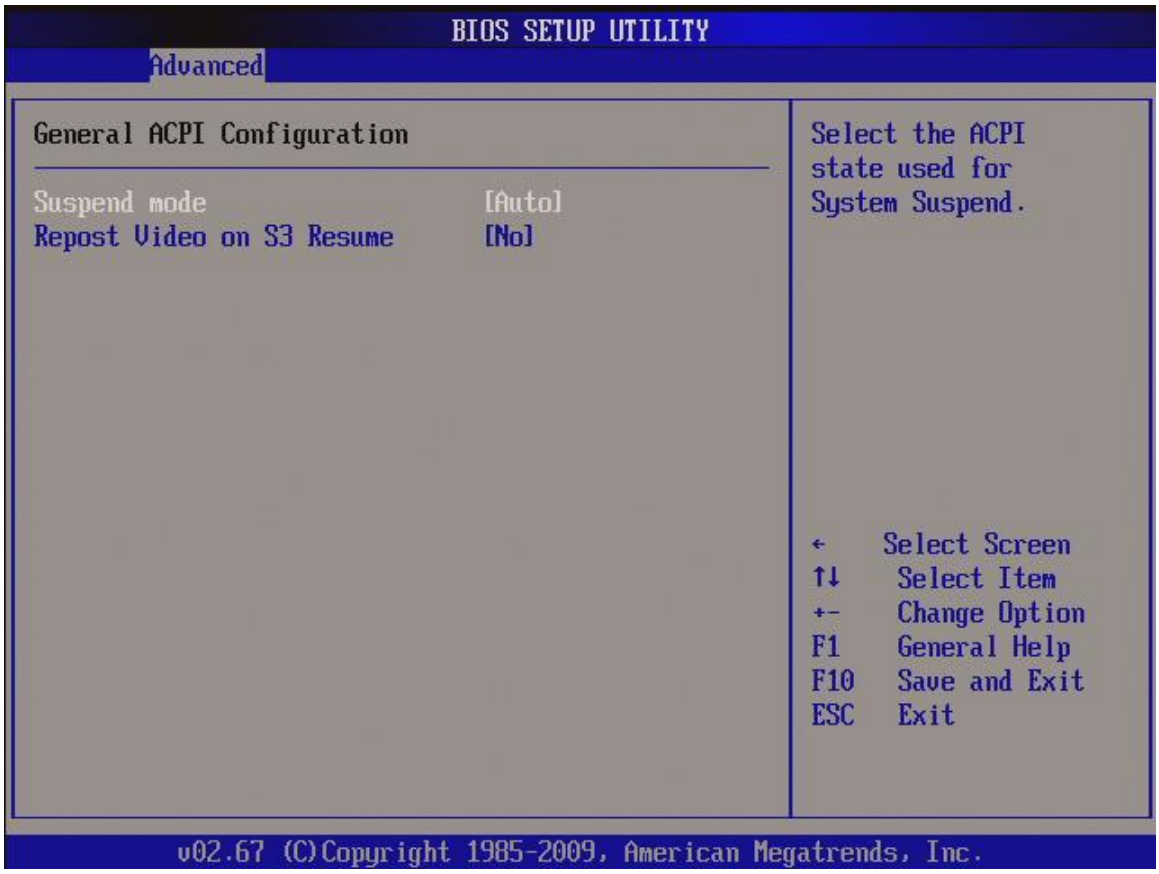
3.5.5 ACPI Configuration

You can use this screen to select options for the ACPI settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.



General ACPI Configuration

This item allows you to set general ACPI Configuration.



Suspend mode

Allows you to select the Advanced Configuration and Power Interface(ACPI) state to be used for system suspend.

[Auto] The system automatically configures the ACPI suspend mode.

[S1(POS) only] Sets the ACPI suspend mode to S1/POS (Power On Suspend).

[S3 only] Sets the ACPI suspend mode to S3/STR (Suspend to RAM)

Report Video on S3 Resume (This item would be offered when Suspend mode is set to Auto or S3)

Determines whether to invoke VGA BIOS post on S3/STR resume

Chipset ACPI Configuration

This item allows you to set South Bridge ACPI Configuration.

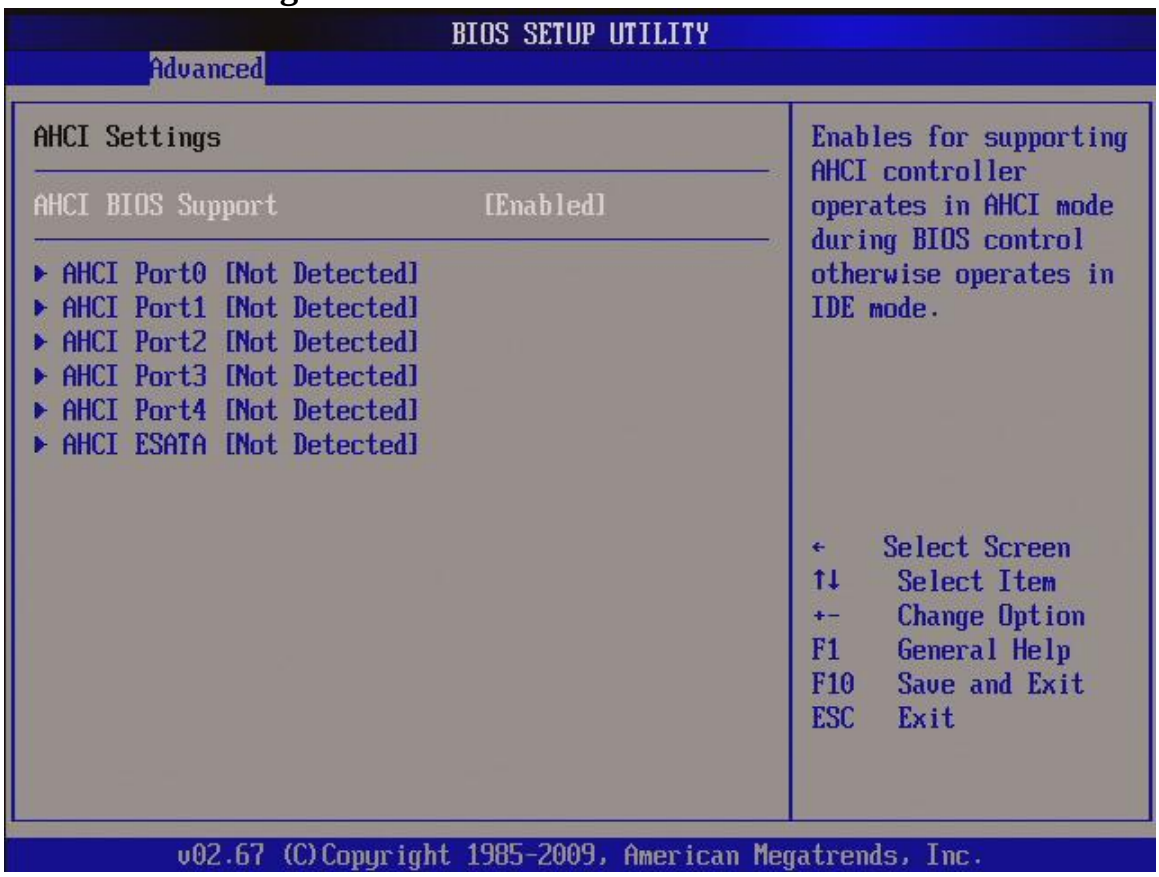
APIC ACPI SCI IRQ

Enable/Disable APIC ACPI SCI IRQ.

High Performance Event Timer

Enable/Disable High performance event timer.

3.5.6 AHCI Configuration


BIOS SETUP UTILITY
Advanced
AHCI Settings
AHCI BIOS Support [Enabled]
AHCI Port0 [Not Detected]
AHCI Port1 [Not Detected]
AHCI Port2 [Not Detected]
AHCI Port3 [Not Detected]
AHCI Port4 [Not Detected]
AHCI ESATA [Not Detected]
Enables for supporting AHCI controller operates in AHCI mode during BIOS control otherwise operates in IDE mode.
← Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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AHCI Port1-6 [XXXX]

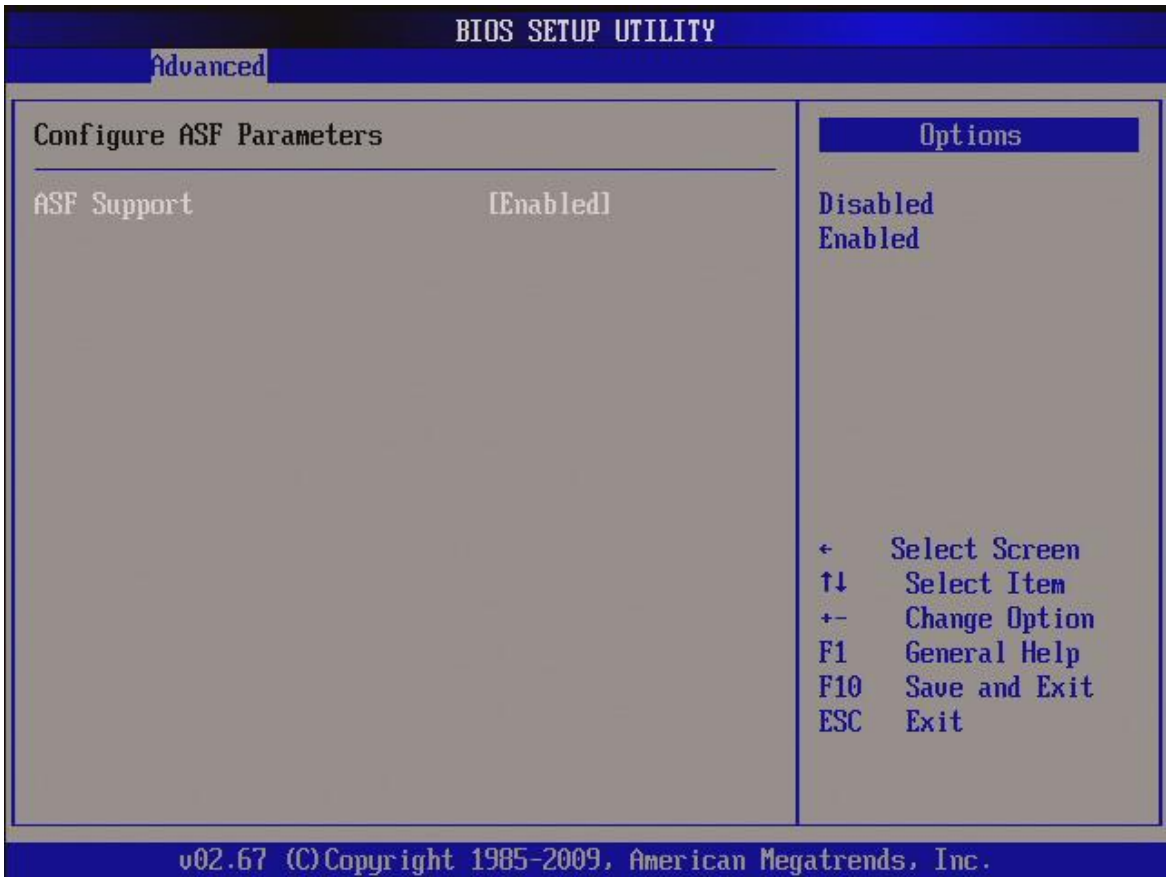
Displays the status of auto-detection of SATA devices.

AHCI Port1-6 [Auto]

[Auto] Allows automatic selection of the device type connected to the system.

[Not Detected] Selects this option if no SATA devices are installed.

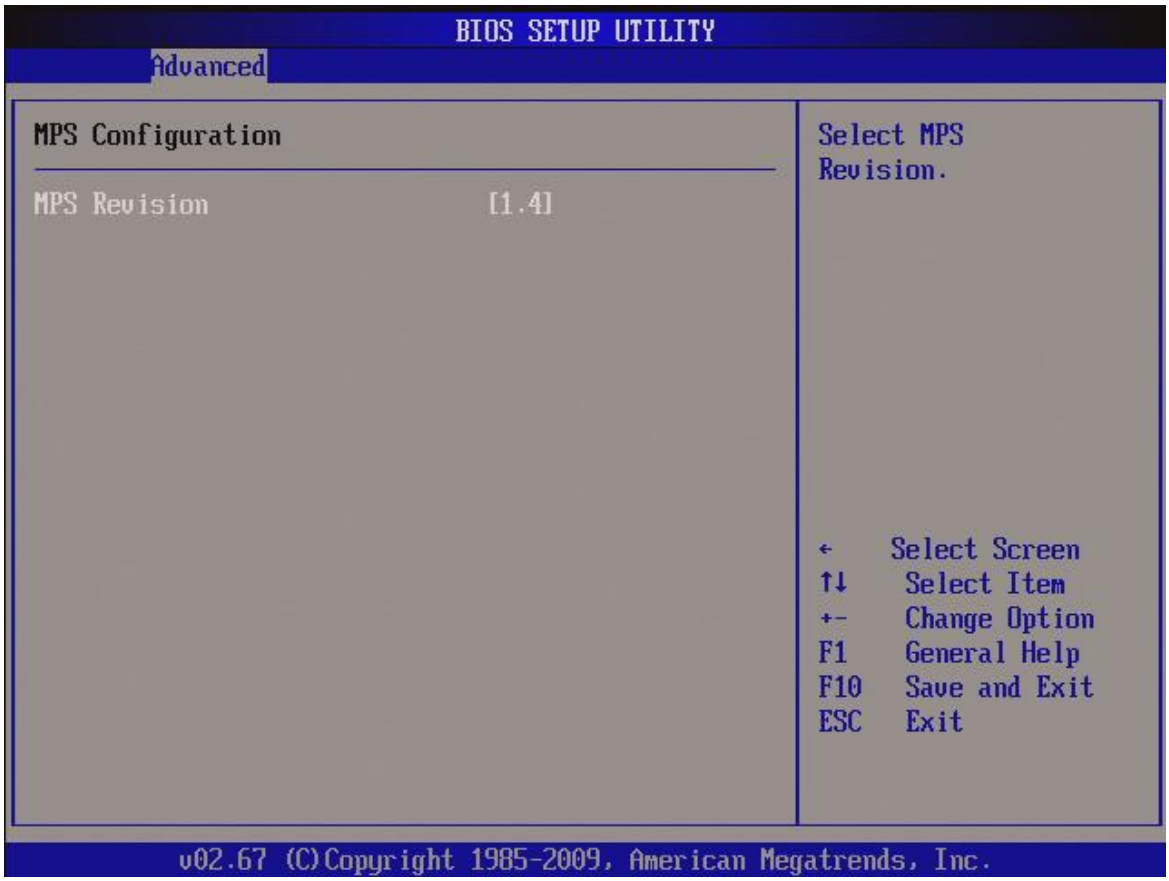
3.5.7 ASF Configuration



ASF Support

ASF (Alert Standard Format) provides standards-based alerting and remote control. Both the alerting and remote control capabilities of ASF are hardware-based and local to the networking solution on managed systems. This allows these solutions CPU and OS independence, providing a persistent connection with the management console.

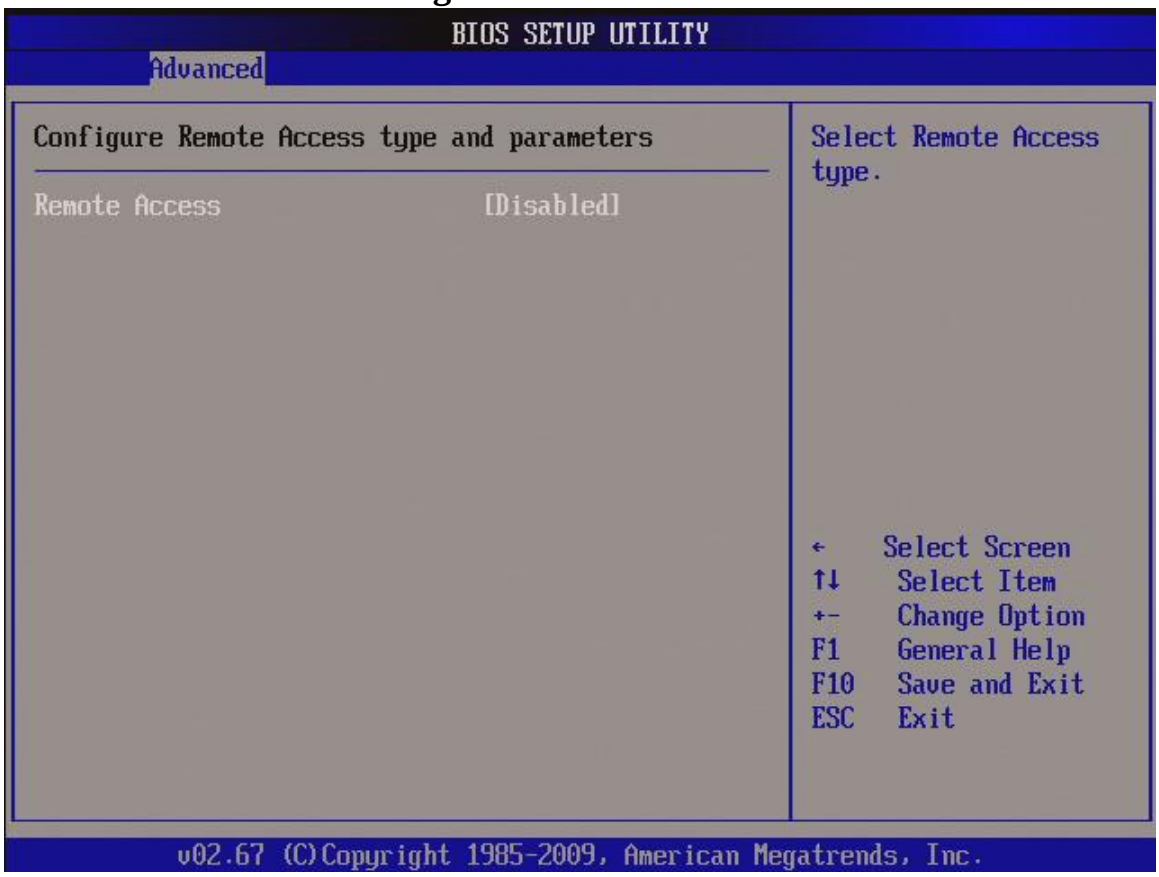
3.5.8 MPS Configuration



MPS Revision

This feature is only applicable to multiprocessor motherboards as it specifies the version of the Multi-Processor Specification (MPS) that the motherboard will use. The MPS is a specification by which PC manufacturers design and build Intel architecture systems with two or more processors.

3.5.9 Remote Access Configuration

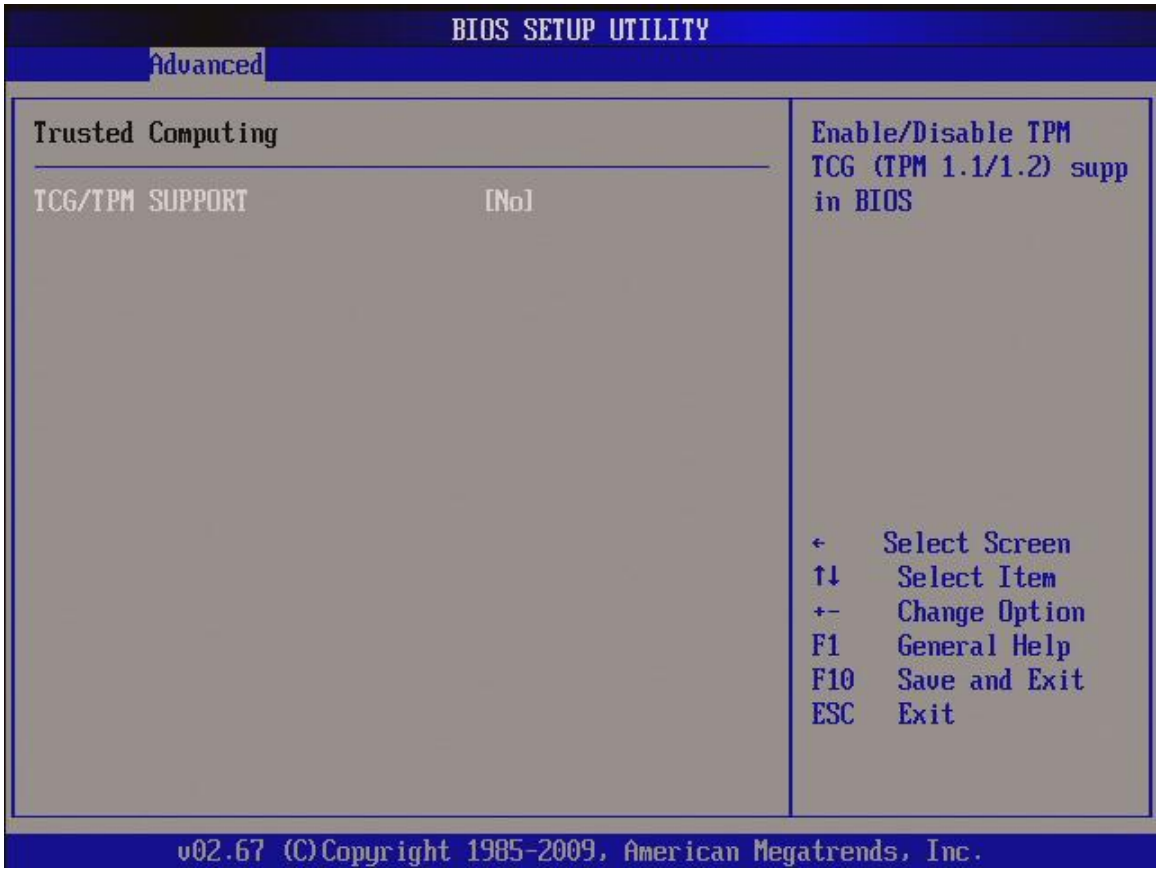


You can disable or enable the BIOS remote access feature here. This function is used to redirect the console from the serial port. The Optimal and Fail-Safe default setting is Disabled.

If you want to use SOL, which is provided by Intel AMT, you have to enable the Remote access feature.

3.5.10 Trusted Computing

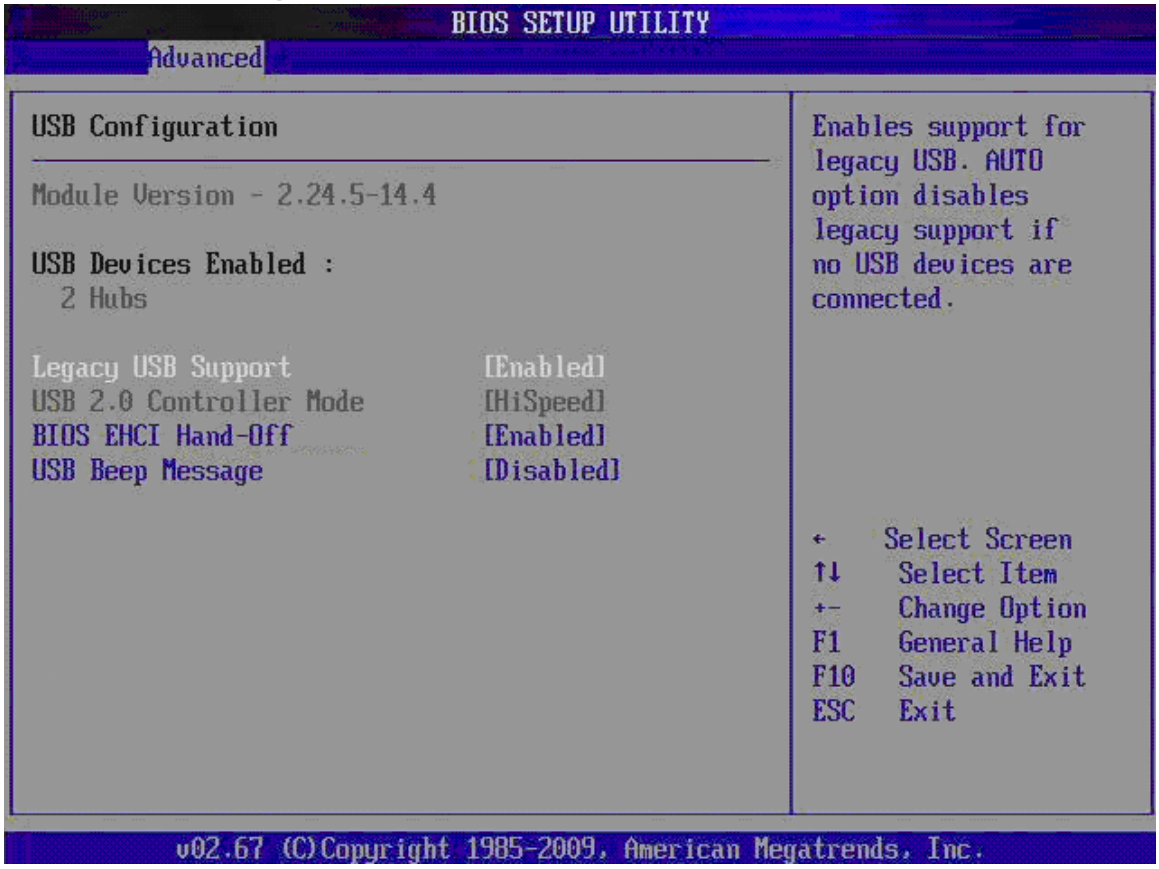
You can use this screen to select options for the Intel Trusted Computing settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.



TCG/TPM SUPPORT

Enable or disable TPM TCG (TPM 1.1/1.2) support in BIOS.

3.5.11 USB Configuration


BIOS SETUP UTILITY
Advanced
USB Configuration
Module Version - 2.24.5-14.4
USB Devices Enabled :
2 Hubs
Legacy USB Support [Enabled]
USB 2.0 Controller Mode [HiSpeed]
BIOS EHCI Hand-Off [Enabled]
USB Beep Message [Disabled]
Enables support for legacy USB. AUTO option disables legacy support if no USB devices are connected.
← Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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Legacy USB Support (This item is offered in QG2 SKU)

Enables support for legacy USB. Auto option disables legacy support if no USB devices are connected.

USB 2.0 Controller Mode

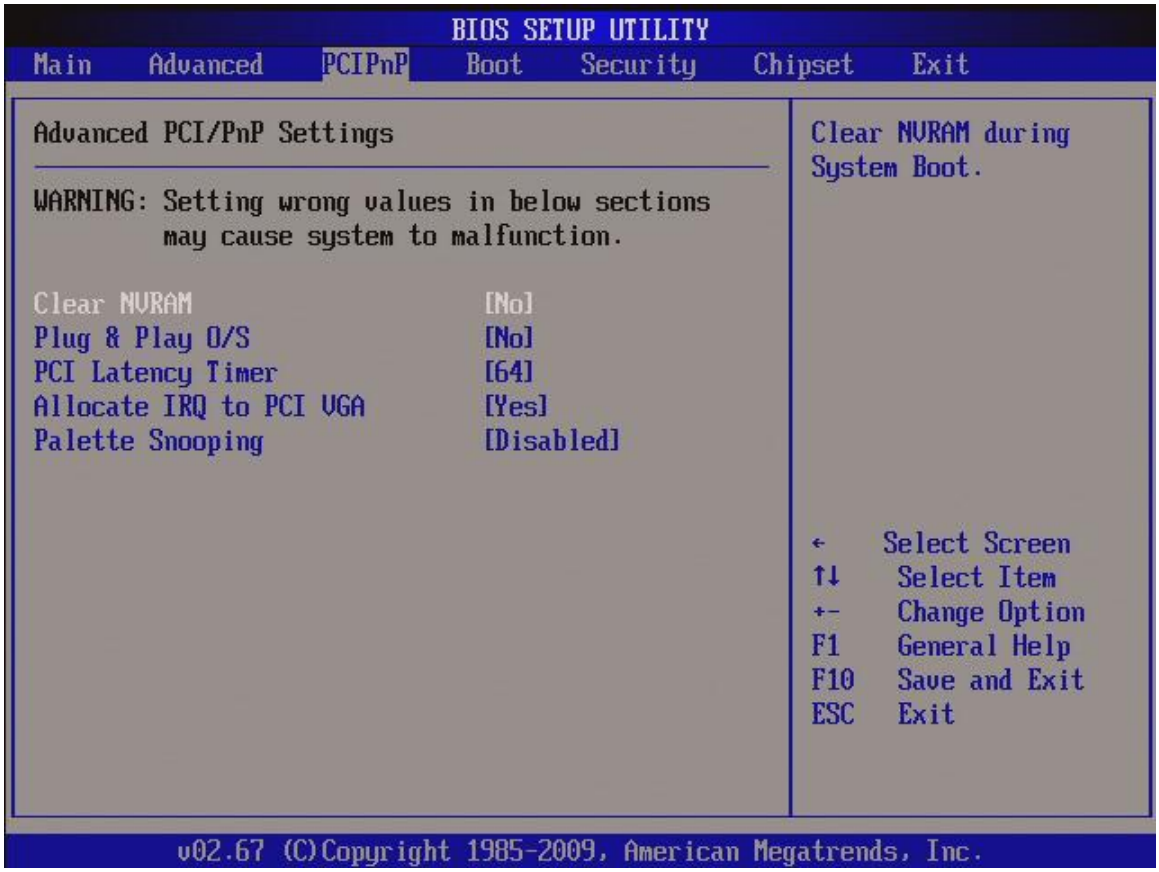
This item allows you to select Hi-Speed (480 Mbps) or Full-Speed (12 Mbps).

Legacy USB1.1 HC Support (This item is offered in QG2 SKU)

Allows the system to detect the presence of USB devices at startup. If detected, the USB controller legacy mode is enabled. If no USB device is detected. the legacy USB
support is disabled.

3.6 Advanced PCI/PnP Settings

Select the *PCI/PnP* tab from the setup screen to enter the Plug and Play BIOS Setup screen. You can display a Plug and Play BIOS Setup option by highlighting it using the <Arrow> keys. All Plug and Play BIOS Setup options are described in this section. The Plug and Play BIOS Setup screen is shown below.


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Exit
Advanced PCI/PnP Settings
WARNING: Setting wrong values in below sections may cause system to malfunction.
Clear NVRAM [No]
Plug & Play O/S [No]
PCI Latency Timer [64]
Allocate IRQ to PCI VGA [Yes]
Palette Snooping [Disabled]
Clear NVRAM during System Boot.
← Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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3.6.1 Clear NVRAM

This item is to clear NVRAM during system boot. The choices are No or Yes.

3.6.2 Plug & Play O/S

Set this value to allow the system to modify the settings for Plug and Play operating system support. The default setting is *No*.

Option	Description
No	The *No* setting is for operating systems that do not meet the Plug and Play specifications. It allows the BIOS to configure all the devices in the system. This is the default setting.
Yes	The *Yes* setting allows the operating system to change the interrupt, I/O and DMA settings. Set this option if the system is running Plug and Play aware operating systems.

3.6.3 PCI Latency Timer

Set this value to allow the PCI Latency Timer to be adjusted. This option sets the latency of all PCI devices on the PCI bus. The default setting is 64.

Option	Description
32	This option sets the PCI latency to 32 PCI clock cycles.
64	This option sets the PCI latency to 64 PCI clock cycles. This is the default setting.
96	This option sets the PCI latency to 96 PCI clock cycles.
128	This option sets the PCI latency to 128 PCI clock cycles.
160	This option sets the PCI latency to 160 PCI clock cycles.
192	This option sets the PCI latency to 192 PCI clock cycles.
224	This option sets the PCI latency to 224 PCI clock cycles.
248	This option sets the PCI latency to 248 PCI clock cycles.

3.6.4 Allocate IRQ to PCI VGA

Set this value to allow or restrict the system from giving the VGA adapter card an interrupt address. The default setting is Yes.

Option	Description
Yes	Set this value to allow the allocation of an IRQ to a VGA adapter card that uses the PCI local bus. This is the default setting.
No	Set this value to prevent the allocation of an IRQ to a VGA adapter card that uses the PCI local bus.

3.6.5 Palette Snooping

Set this value to allow the system to modify the Palette Snooping settings. The default setting is Disabled.

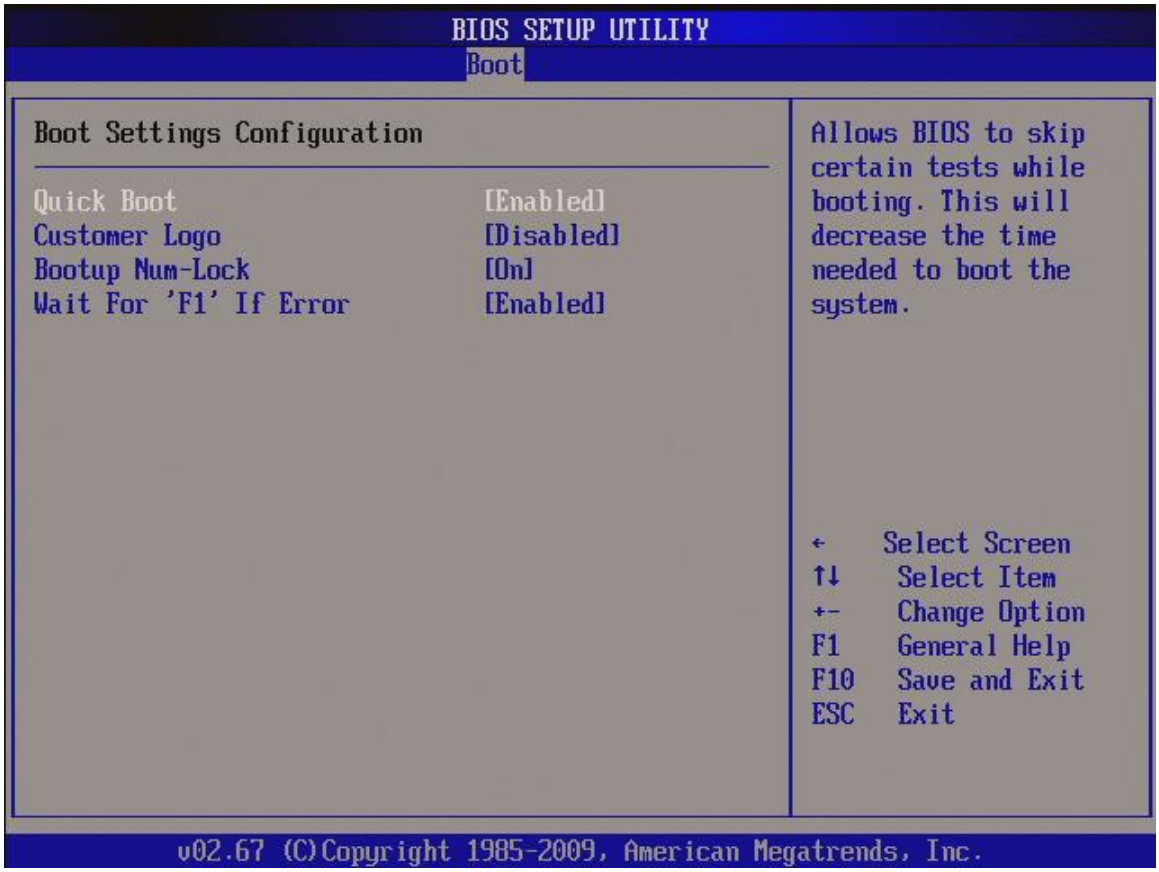
Option	Description
Disabled	This is the default setting and should not be changed unless the VGA card manufacturer requires Palette Snooping to be Enabled.
Enabled	This setting informs the PCI devices that an ISA based Graphics device is installed in the system. It does this so the ISA based Graphics card will function correctly. This does not necessarily indicate a physical ISA adapter card. The graphics chipset can be mounted on a PCI card. Always check with your adapter card's manual first, before modifying the default settings in the BIOS.

3.7 Boot Settings

Select the *Boot* tab from the setup screen to enter the Boot Setup screen. You can display a Boot Setup option by highlighting it using the <Arrow> keys. All Boot BIOS Setup options are described in this section. The Boot BIOS Setup screen is shown below.

3.7.1 Boot Settings Configuration

You can use this screen to select options for the Boot settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.


BIOS SETUP UTILITY
Boot
Boot Settings Configuration
Quick Boot [Enabled]
Customer Logo [Disabled]
Bootup Num-Lock [On]
Wait For 'F1' If Error [Enabled]
Allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.
← Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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Quick Boot

The default setting is Enabled.

Option	Description
Disabled	Set this value to allow the BIOS to perform all POST tests.
Enabled	Set this value to allow the BIOS to skip certain POST tests to boot faster.

Bootup Num-Lock

Set this value to allow the Number Lock setting to be modified during boot up. The default setting is On.

Option	Description
Off	This option does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard will light up when the Number Lock is engaged.
On	Set this value to allow the Number Lock on the keyboard to be enabled automatically when the computer system is boot up. This allows the immediate use of 10-keys numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard will be lit. This is the default setting.

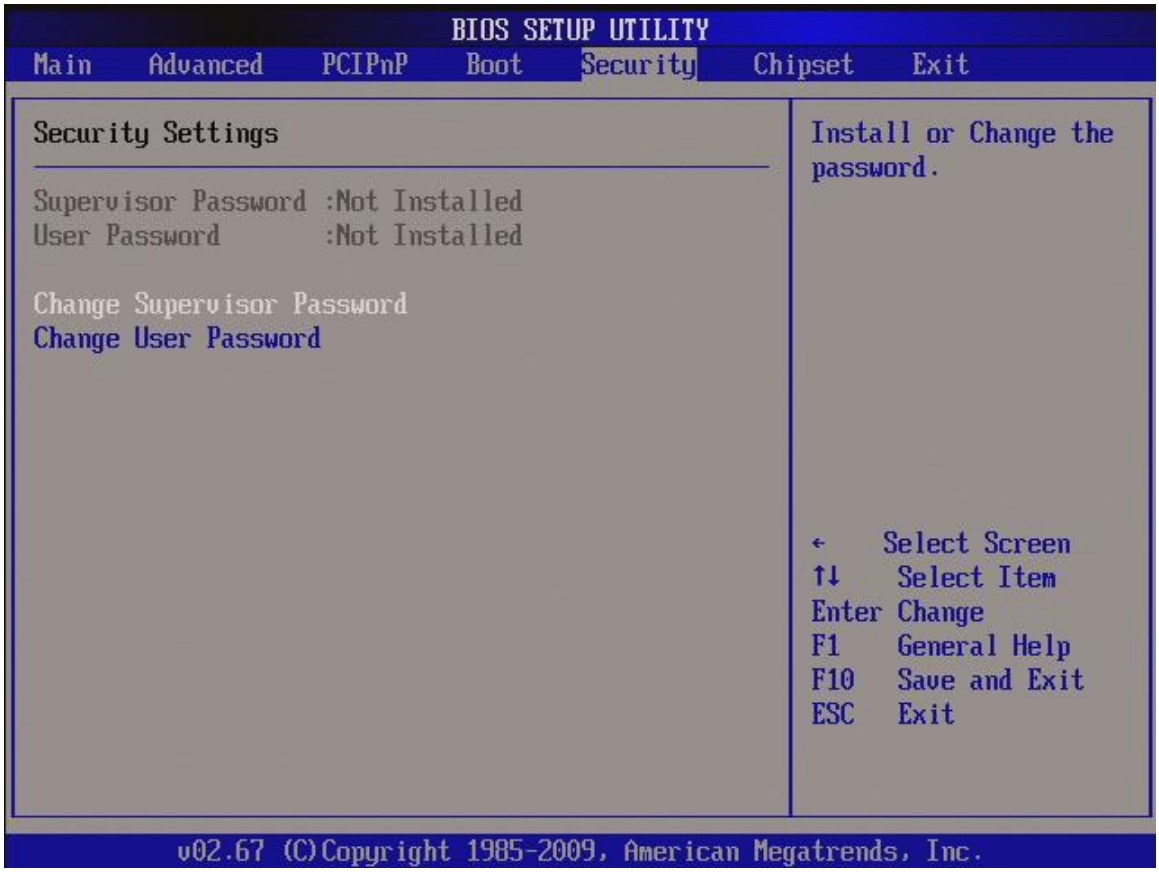
Wait For "F1" If Error

Set this value to allow the Wait for "F1" Error setting to be modified. The default setting is Enabled.

Option	Description
Disabled	This prevents the to wait on an error for user intervention. This setting should be used if there is a known reason for a BIOS error to appear. An example would be a system administrator must remote boot the system. The computer system does not have a keyboard currently attached. If this setting is set, the system will continue to boot up in to the operating system. If "F1" is enabled, the system will wait until the BIOS setup is entered.
Enabled	Set this value to allow the system BIOS to wait for any error. If an error is detected, pressing <F1> will enter Setup and the BIOS setting can be adjusted to fix the problem. This normally happens when upgrading the hardware and not setting the BIOS to recognized it. This is the default setting.

3.8 Security Setup

Select Security Setup from the Setup main BIOS setup menu. All Security Setup options, such as password protection and virus protection, are described in this section. To access the sub menu for the following items, select the item and press <Enter>:

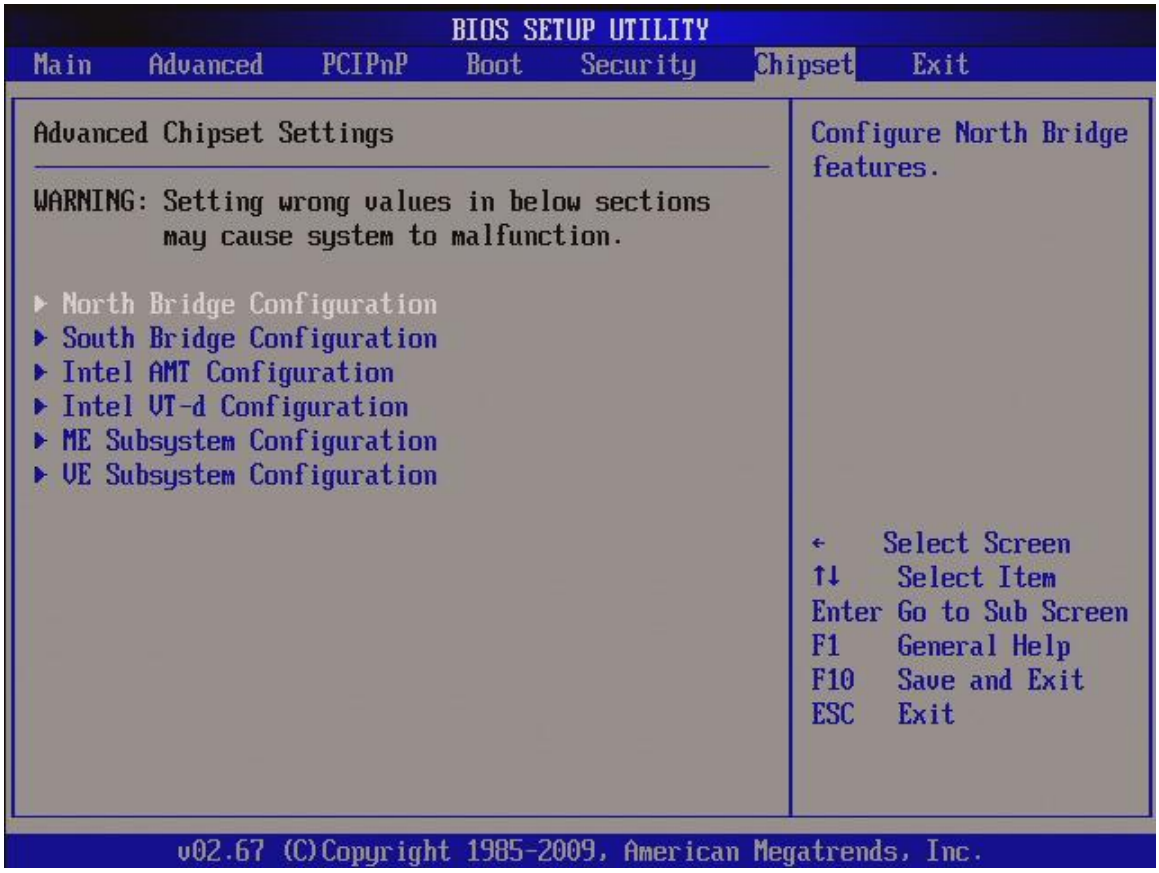


Change Supervisor / User Password

Provides for either installing or changing the password.

3.9 Chipset Setup

Select the *Chipset* tab from the setup screen to enter the Chipset BIOS Setup screen. You can select any of the items in the left frame of the screen, such as CPU Configuration, to go to the sub menu for that item. You can display a Chipset BIOS Setup option by highlighting it using the <Arrow> keys. All Chipset BIOS Setup options are described in this section. The Chipset BIOS Setup screen is shown below.


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Exit
Advanced Chipset Settings
WARNING: Setting wrong values in below sections may cause system to malfunction.
North Bridge Configuration
South Bridge Configuration
Intel AMT Configuration
Intel VT-d Configuration
ME Subsystem Configuration
VE Subsystem Configuration
Configure North Bridge features.
← Select Screen
↑↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
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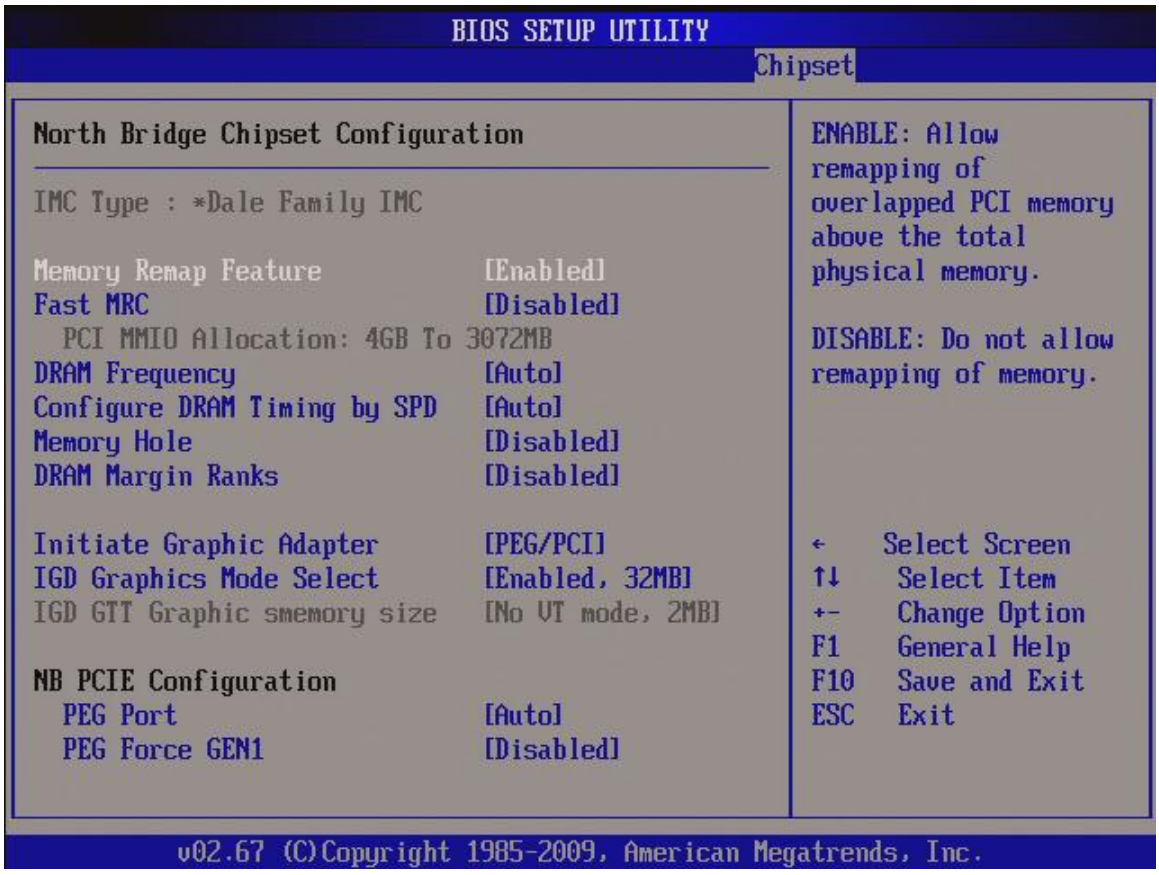
3.9.1 North Bridge Configuration

You can use this screen to select options for the North Bridge Configuration. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option.


BIOS SETUP UTILITY
Chipset
North Bridge Chipset Configuration
IMC Type : *Dale Family IMC
Memory Remap Feature [Enabled]
Fast MRC [Disabled]
PCI MMIO Allocation: 4GB To 3072MB
DRAM Frequency [Auto]
Configure DRAM Timing by SPD [Auto]
Memory Hole [Disabled]
DRAM Margin Ranks [Disabled]
Initiate Graphic Adapter [PEG/PCI]
IGD Graphics Mode Select [Enabled, 32MB]
IGD GTT Graphic smemory size [No VT mode, 2MB]
NB PCIE Configuration
PEG Port [Auto]
PEG Force GEN1 [Disabled]
ENABLE: Allow remapping of overlapped PCI memory above the total physical memory.
DISABLE: Do not allow remapping of memory.
← Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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Note: The North Bridge Configuration setup screen varies depending on the supported North Bridge chipset.

Memory Remap Feature

Enabling this feature allows the system to use memory capacity larger than 4GB, disabling this limits system memory capacity no more than 4GB.

Fast MRC (This item would be offered in QG2 SKU)

Enabling this feature allows MRC directly restores memory data from NVRAM without hardware training while cold booting. Disabling this will make memory detection and hardware training necessary while cold booting.

DRAM Frequency

This setting allows the user to select DRAM frequency.

Configure DRAM Timing by SPD

When enabled, DRAM will operate with a frequency set by SPD, disabling this will allow the user to manually set DRAM frequency.

Memory Hole

This setting allows the user to reserve the 1MB of memory required by some legacy add-on cards.

DRAM Margin Ranks

This allows the user to enable or disable the DRAM Margin Ranks function.

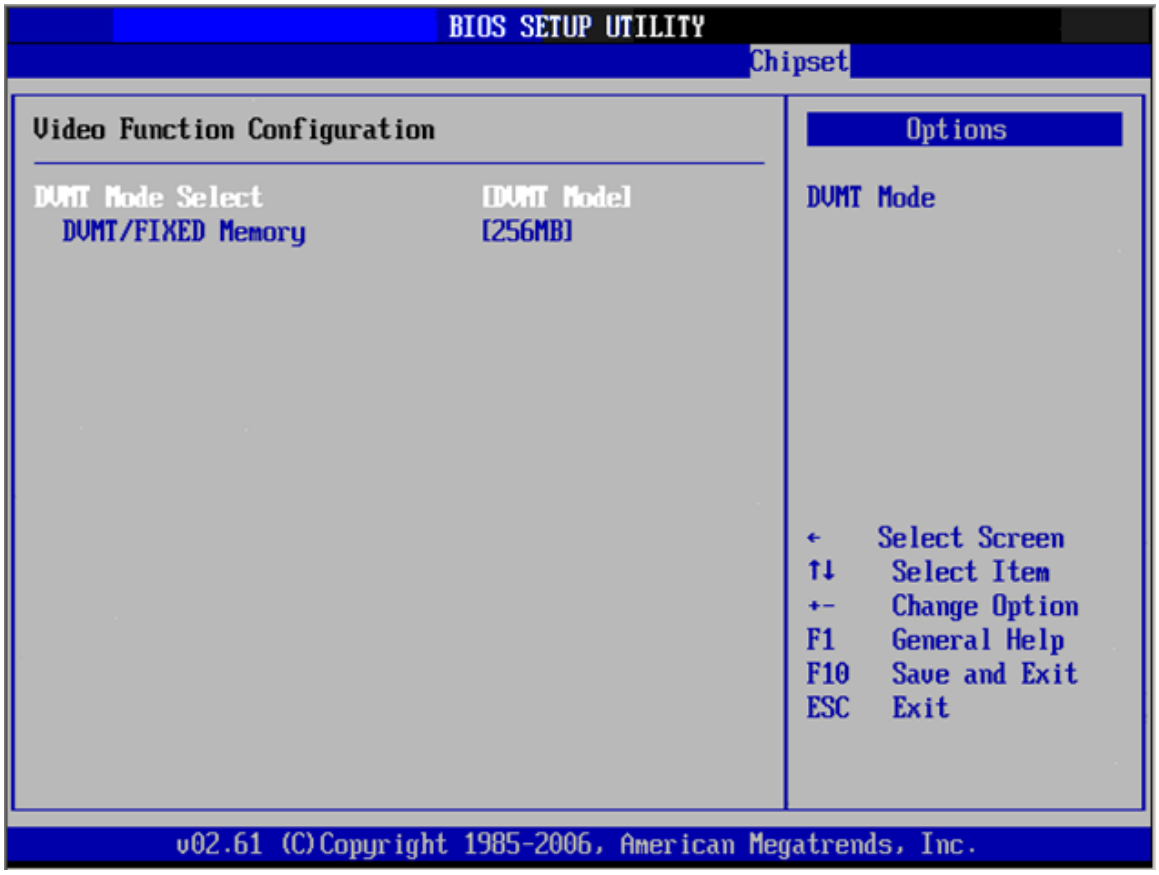
Initiate Graphic Adapter

This setting allows the user to select which graphics controller to be the primary graphic device when booting up.

IGD Graphics Mode Select

Allows you to decide whether to use the integrated GPU and select the amount of memory used by the integrated GPU.

Video Function Configuration



DVMT Mode Select

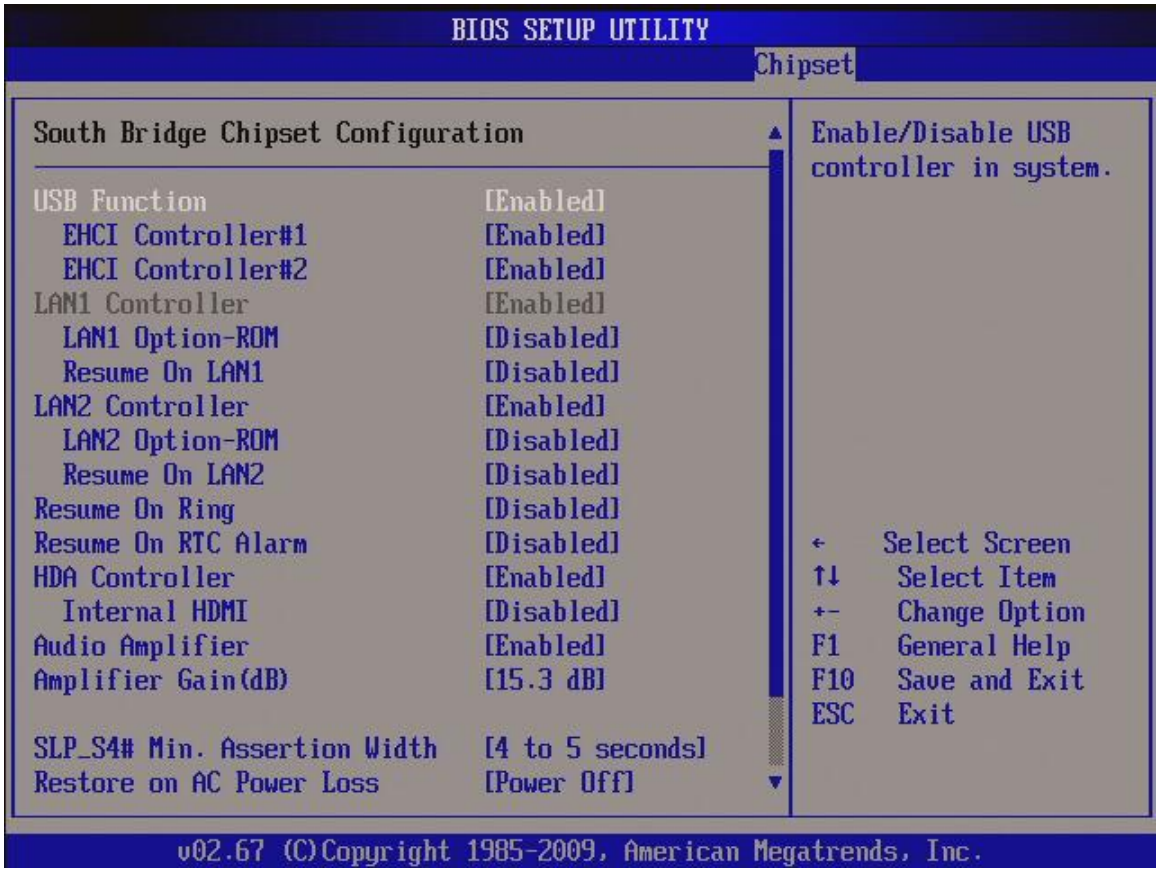
Use this field to select the memory to allocate for video memory. The choice is DVMT.

DVMT/Fixed Memory Size

Specify the size of DVMT/system memory to allocate for video memory.

3.9.2 South Bridge Configuration

You can use this screen to select options for the South Bridge Configuration. South Bridge is a chipset on the motherboard that controls the basic I/O functions, USB ports, audio functions, modem functions, IDE channels, and PCI slots. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option.



USB Functions

Select: Enable/Disabled USB controller in system

EHCI Controller#1

Enable or disable Integrated USB 2.0 RMH#1

EHCI Controller#2

Enable or disable Integrated USB 2.0 RMH#2

LAN1 Controller

Enables or disables the LAN1 controller.

LAN1 Option-ROM

Enables or disables LAN1 option-ROM.

Resume On LAN1

Enables or disables LAN1 resuming.

LAN2 Controller

Enables or disables the LAN2 controller.

LAN2 Option-ROM

Enables or disables LAN2 option-ROM.

Resume On LAN2

Enables or disables LAN2 resuming.

Resume on Ring

Enabling this will allow the system to be woken up by modem ringing.

Resume on RTC Alarm

Enabling this will allow the system to be woken up by RTC alarm.

HDA Controller

Enables or disables the High Definition audio controller.

Internal HDMI

Enables or disables the HDMI controller.

SLP_S4# Min. Assertion Width

This item allows you to set a delay of a set number of seconds.

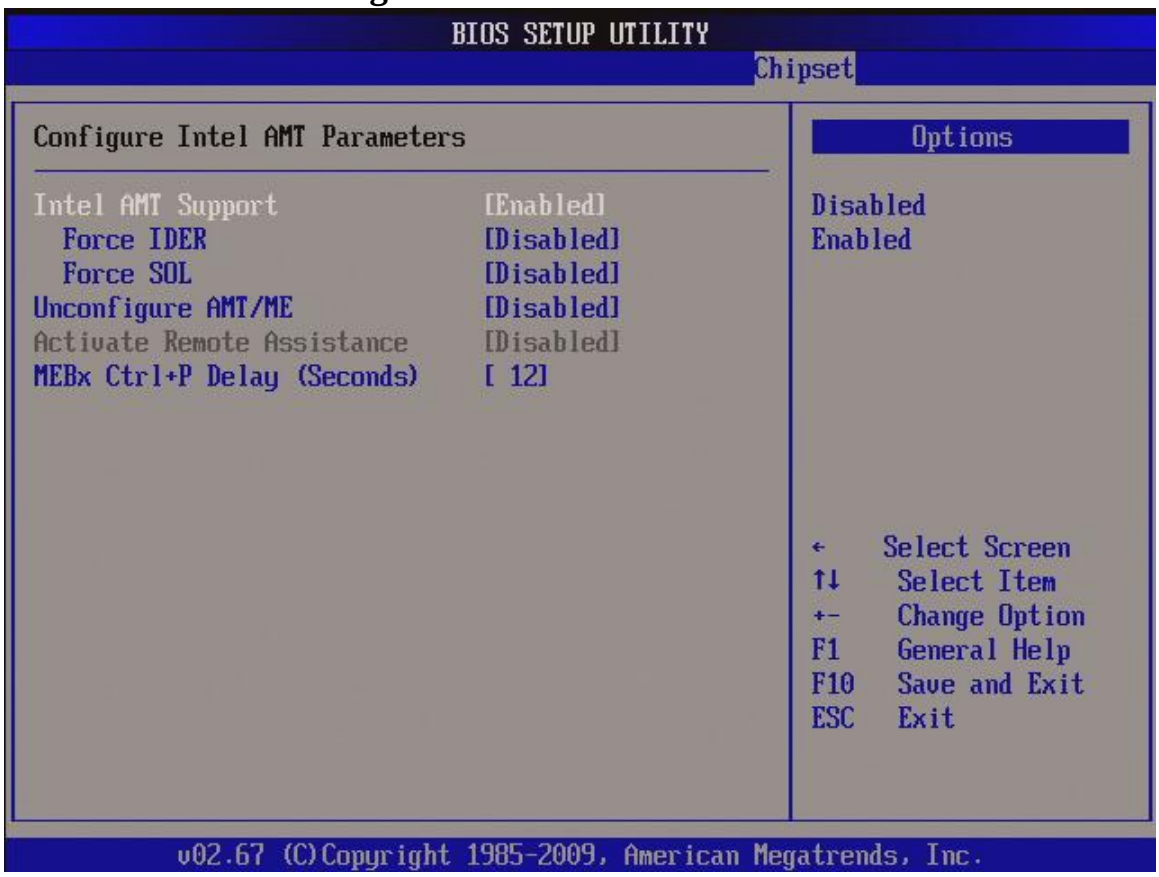
Restore on AC Loss

This allow the user to define how the system responds to power restore after AC power loss.

Power Type

This allows the user to choose power type.

3.9.3 Intel AMT Configuration



Intel AMT Support

Enables or disables Intel AMT function.

Force IDER

Enables or disables IDE redirection under Intel AMT support.

Force SOL

Enables or disables SOL under Intel AMT support.

If you enable SOL here, the remote access has been set as enable which is described in section 2.4.9

Unconfigure AMT/ME

This item allows the user to clear ME settings.

Activate Remote Assistance

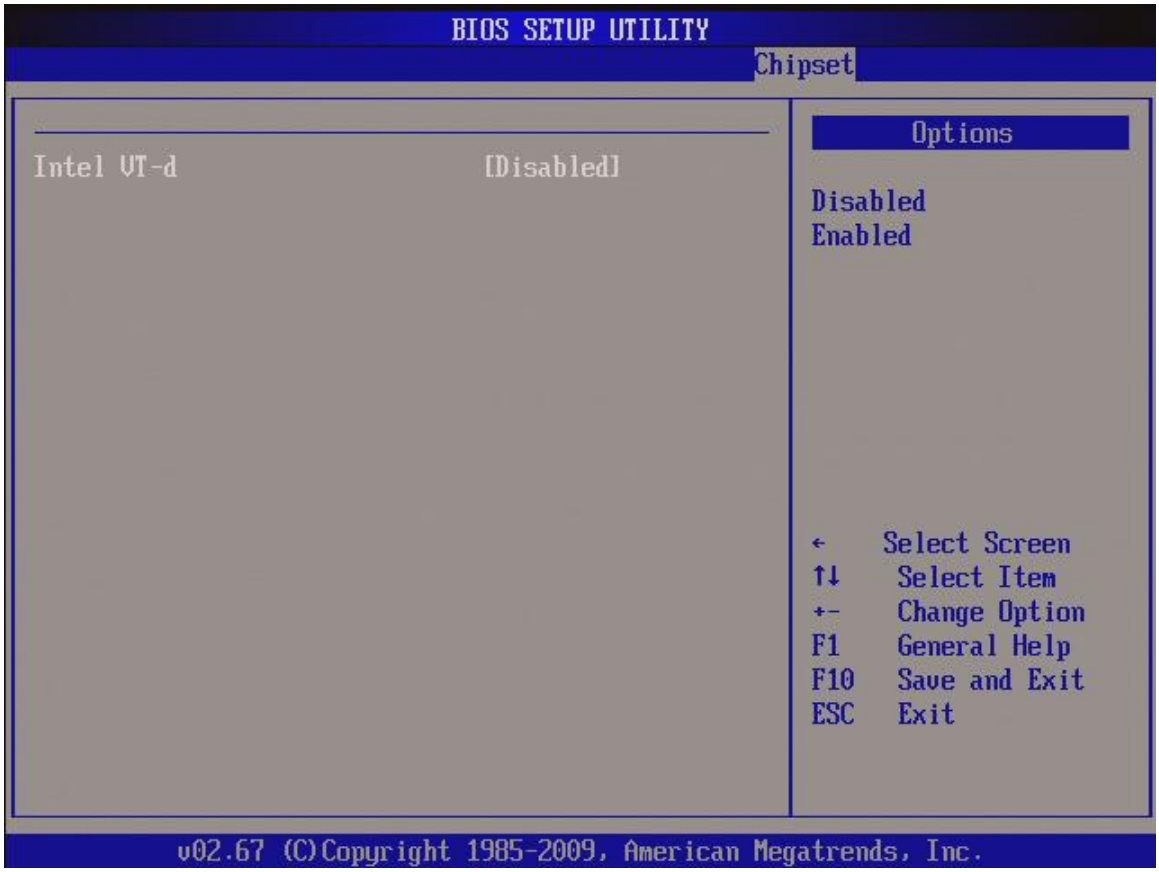
This item allows the user to enable or disable remote assistance features.

MEBx Ctrl+P Delay (Seconds)

This item allows the user to set delay times to show "Ctrl + P" for entering ME setting configuration.

3.9.4 Intel VT-d Configuration

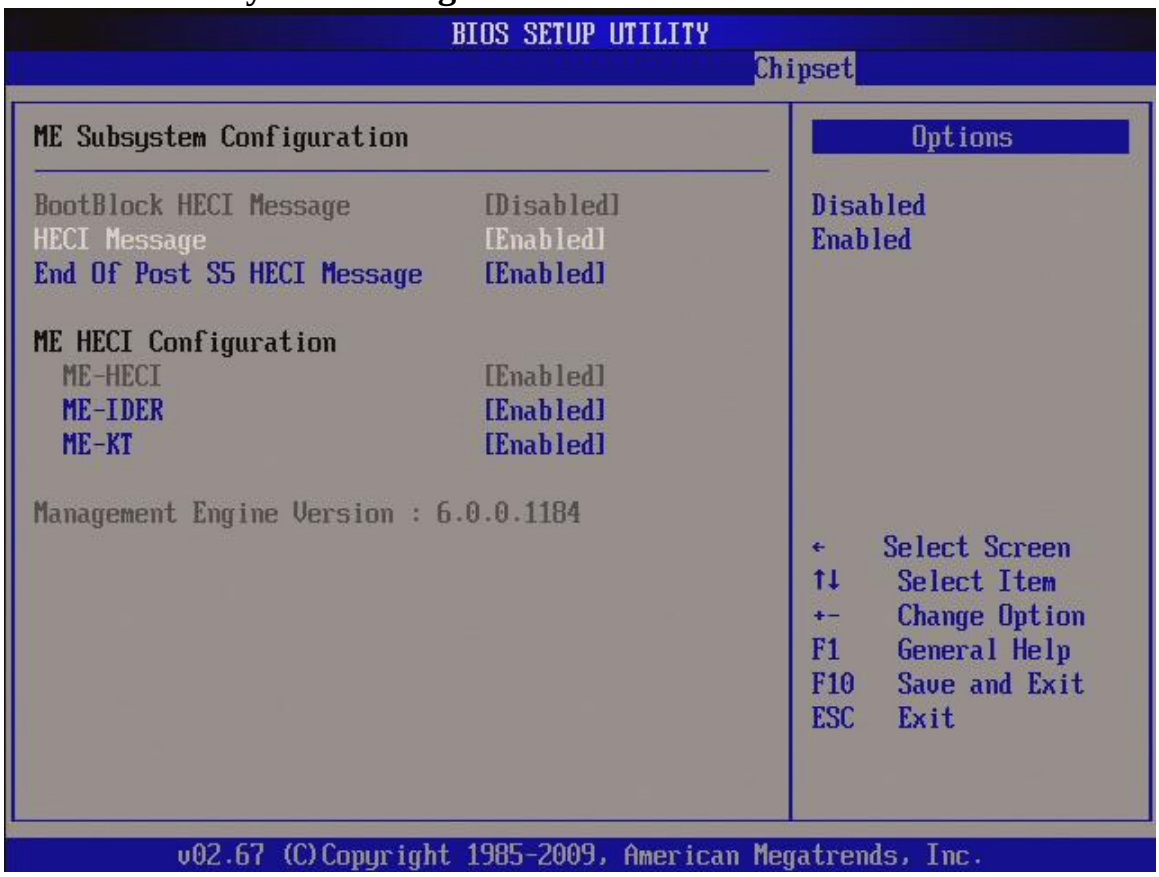
You can use this screen to select options for the Intel VT-d settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages. The screen is shown below.



Intel VT-d

The Choices are enabled or disabled the Intel VT-d.

3.9.5 ME Subsystem Configuration



Boot Block HECI Message

This allows the user to enable or disable Boot Block HECI messaging between system BIOS code and ME code.

HECI Message

This allows the user to enable or disable HECI messaging between system BIOS code and ME code.

End of POST S5 HECI Message

Enabling this will let system BIOS code to inform ME code ending of POST S5 via HECI messaging.

ME HECI Configuration

ME-HECI

This allows the user to enable or disable HECI function of ME.

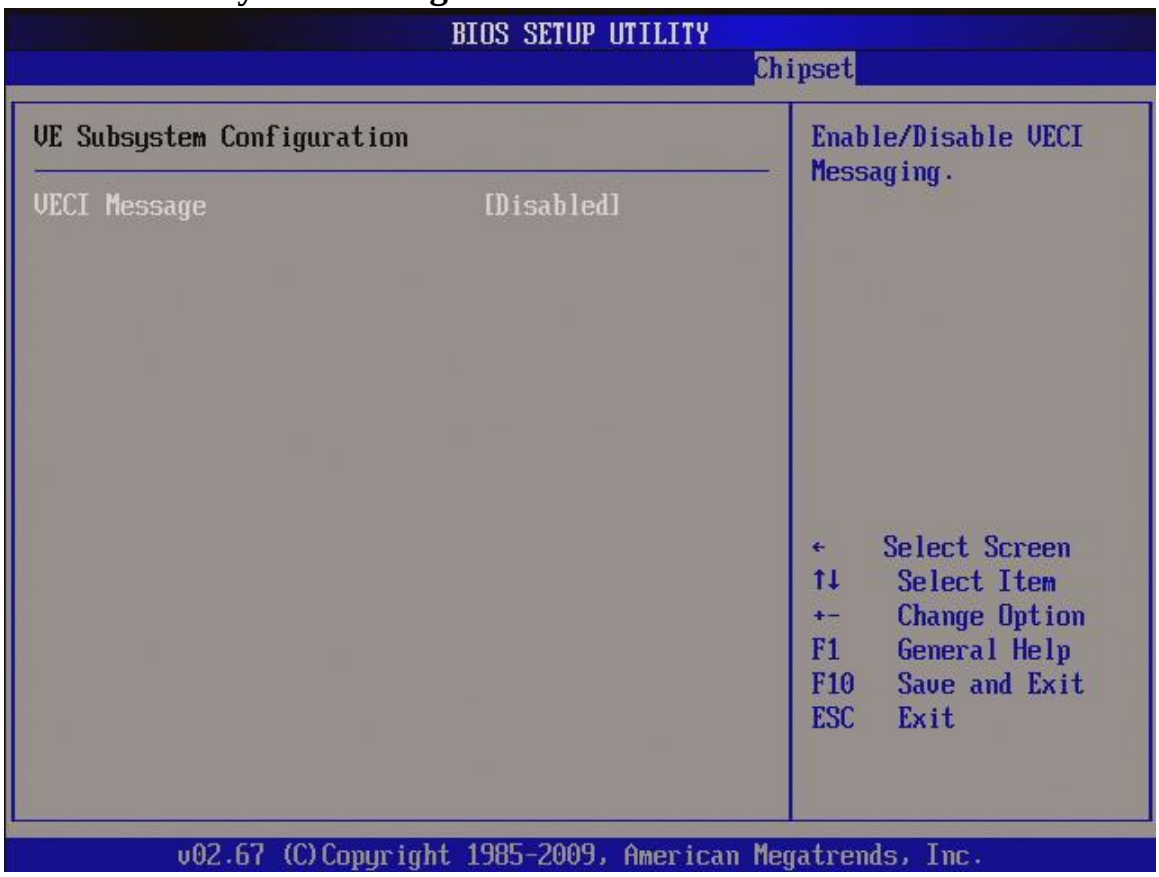
ME-IDER

This allows the user to enable or disable IDE redirection function of ME.

ME-KT

This allows the user to enable or disable KT function of ME.

3.9.6 VE Subsystem Configuration

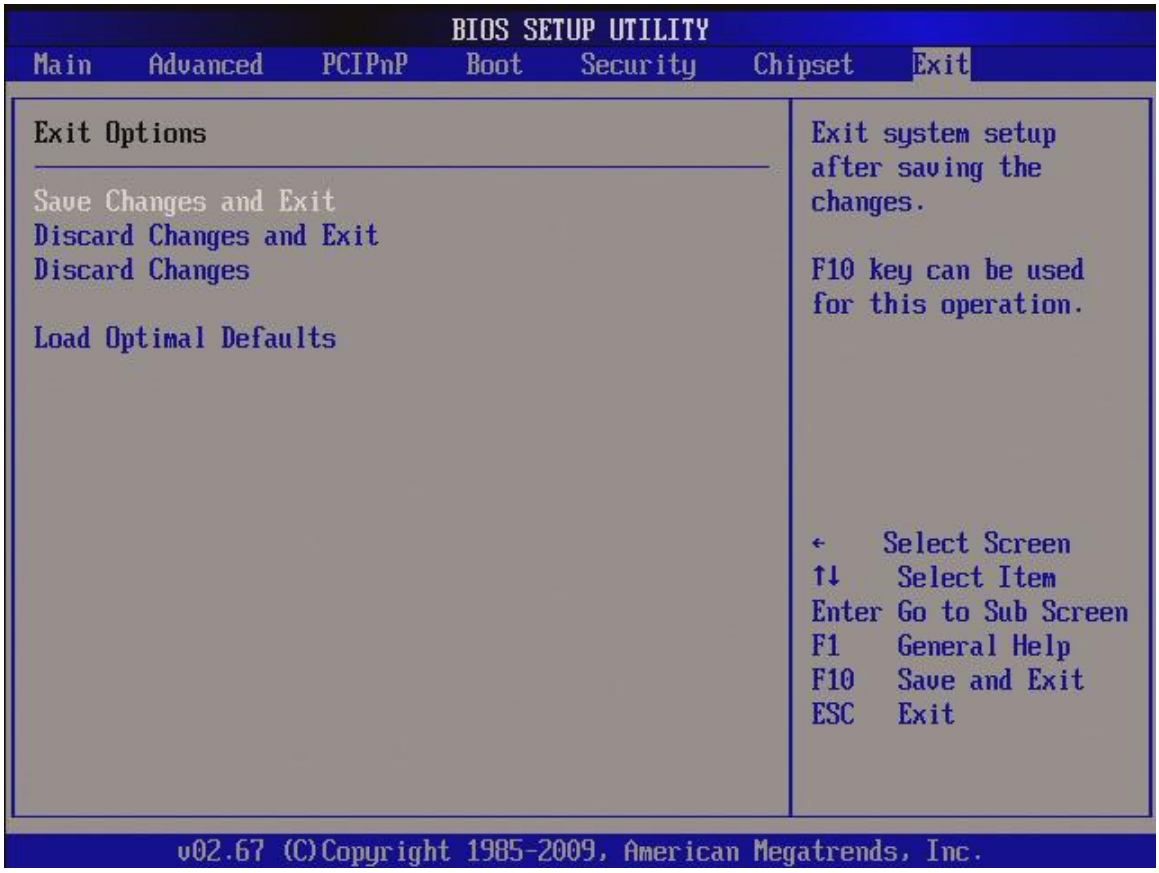


Intel VE Subsystem Configuration

VE refers to Intel Virtualization Engine. Access to the PBA area is permitted via the VE by using the VE Command Interface (VECI), or via the Intel ME by using the Intel AT-d Host Command Interface (DHCI); which uses HECI. The VE can ensure that access requests outside the PBA ranges are prevented given that PBA code executes on the host processor.

3.10 Exit Menu

Select the *Exit* tab from the setup screen to enter the Exit BIOS Setup screen. You can display an Exit BIOS Setup option by highlighting it using the <Arrow> keys. All Exit BIOS Setup options are described in this section. The Exit BIOS Setup screen is shown below.


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Exit
Exit Options
Save Changes and Exit
Discard Changes and Exit
Discard Changes
Load Optimal Defaults
Exit system setup after saving the changes.
F10 key can be used for this operation.
← Select Screen
↑↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
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3.10.1 Save Changes and Exit

When you have completed the system configuration changes, select this option to leave Setup and reboot the computer so the new system configuration parameters can take effect. Select Exit Saving Changes from the Exit menu and press <Enter>.

Save Configuration Changes and Exit Now?

[Ok] [Cancel]

Select Ok to save changes and exit.

3.10.2 Discard Changes and Exit

Select this option to quit Setup without making any permanent changes to the system configuration. Select Exit Discarding Changes from the Exit menu and press <Enter>.

Discard Changes and Exit Setup Now?

[Ok] [Cancel]

Select *Ok* to discard changes and exit.

3.10.3 Discard Changes

Select Discard Changes from the Exit menu and press <Enter>.

Discard Changes ?

[Ok] [Cancel]

Select *Ok* to discard changes.

3.10.4 Load Optimal Defaults

The BC57Q automatically configures all setup items to optimal settings when you select this option. Optimal Defaults are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal Defaults if your computer is experiencing system configuration problems. Select Load Optimal Defaults from the Exit menu and press <Enter>.